

FIFTIETH ANNUAL REPOPT

OF THE

DEPARTMENT OF MARINE
AND FISHERIES

FOR THE FISCAL YEAR 1916-17

MARINE

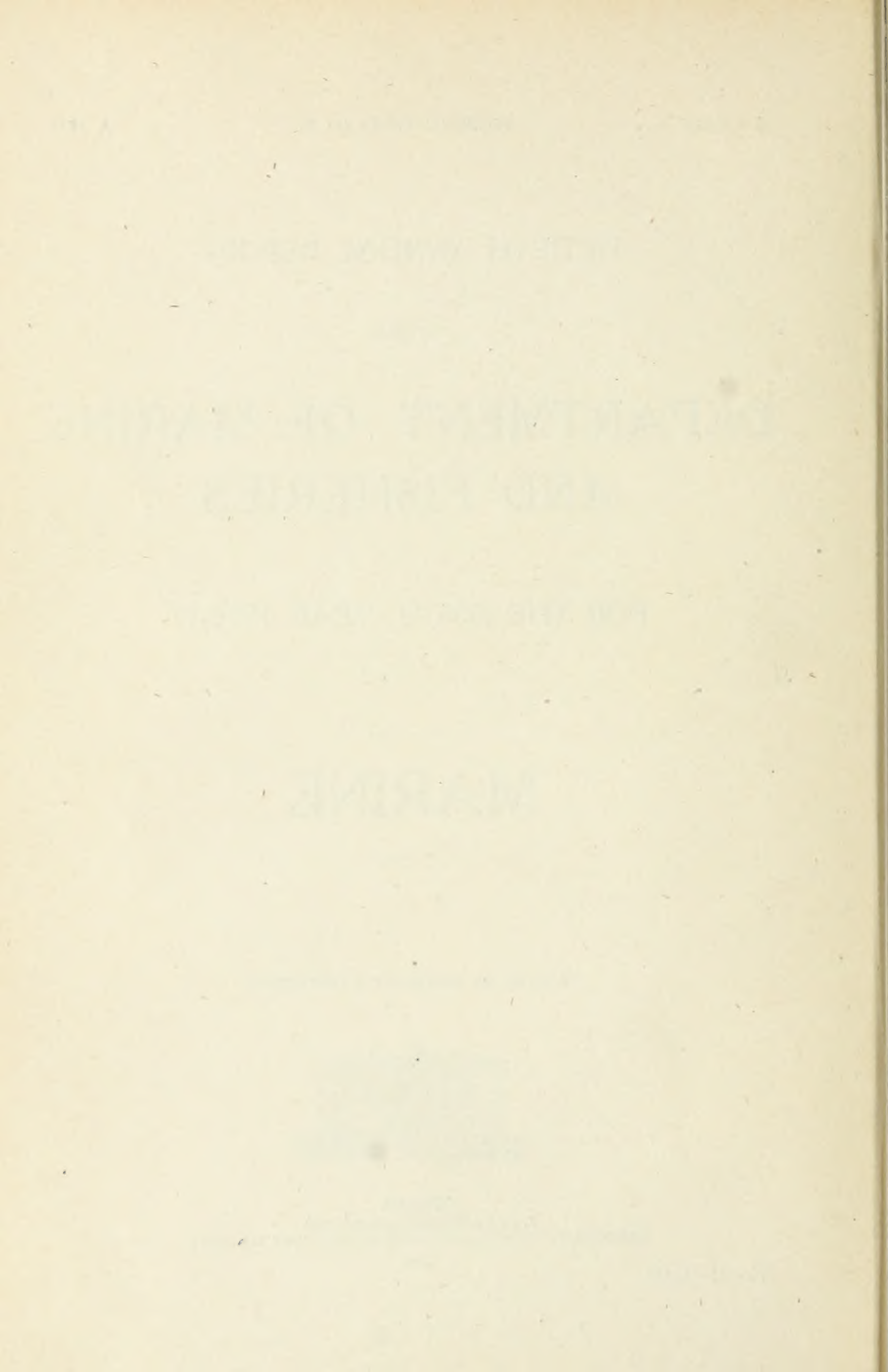
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OTTAWA
J. DE LABROQUERIE TACHÉ
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1917

[No. 21—1918]



*To His Excellency the Duke of Devonshire, K.C., P.C., G.C.M.G., G.C.V.O., etc., etc.,
Governor General of Canada.*

MAY IT PLEASE YOUR EXCELLENCY:

I have the honour to submit herewith, for the information of Your Excellency and the Parliament of Canada, the Fiftieth Annual Report of the Department of Marine and Fisheries, Marine Branch.

I have the honour to be,

Your Excellency's most obedient servant,

C. C. BALLANTYNE,
Minister of Marine and Fisheries.

DEPARTMENT OF MARINE,
OTTAWA, December, 1917.

TABLE OF CONTENTS.

REPORT SUBMITTED BY MINISTER.

REPORT OF DEPUTY MINISTER. Subjects paged in summary below

A				PAGE.
Appropriation, 1916-17..				27
Agencies—Abstracts of Annual Reports of—	Charlottetown, P.E.I., agency.. . . .			225
"	"	St. John, N.B., agency.. . . .		226
"	"	Halifax, N.S., agency.. . . .		227
"	"	Sydney, N.S., agency.. . . .		228
"	"	Pictou, N.S., agency.. . . .		228
"	"	Quebec, P.Q., agency.. . . .		228
"	"	Montreal, P.Q., agency.. . . .		230
"	"	Prescott, Depot, Ont., agency.. . . .		232
"	"	Parry Sound, Ont., agency.. . . .		233
"	"	Victoria, B.C., agency.. . . .		233
Aberdeen..				227
Aranmore..				228
Acetylene..				231
Argenteuil..				231
B				
Balance, unexpended of Appropriation, 1916-17..				27
Brant..				226
Belleville, Ont., Harbour Commission, report of..				248
C				
Canadian Vickers, Limited, Montreal, P.Q..				8
Collingwood Shipbuilding Company, Limited..				9
Correspondence during year..				27
Chief Engineer's Report on lighthouse construction, improvements, etc..				28
"	"	staff..		28
"	"	office work..		28
"	"	publications..		29
"	"	personal inspections..		29
"	"	Hudson Bay lighting..		30
"	"	departmental depots, Victoria, B.C..		30
"	"	"	St. John, N.B..	30
"	"	"	Dartmouth, N.S..	30
"	"	"	Prescott, Ont..	31
"	"	removal of obstructions..		31
"	"	maintenance and repairs to wharves..		31
"	"	icebreaking..		32
"	"	New aids to navigation, etc., in—		
"	"	Nova Scotia..		33
"	"	New Brunswick..		35
"	"	Prince Edward Island..		36
"	"	Quebec..		37
"	"	Montreal..		38
"	"	Ontario..		39
"	"	British Columbia..		41
"	"	recapitulation of expenses..		42
Commissioner of Lights' Report..				43
"	"	Statement showing number of lights of several orders, lightships, lightboats, lightkeepers, fog signals, buoys, submarine bells, etc..		44
"	"	Statement of unlighted aids to navigation maintained in—		
"	"	New Brunswick..		45
"	"	Nova Scotia..		46
"	"	Prince Edward Island..		48
"	"	Quebec..		49
"	"	Montreal..		49
"	"	Prescott..		50

C		PAGE.
Commissioner of Lights' Report— <i>Continued.</i>		
" " Statement of unlighted aid to navigation maintained in—		
Parry Sound..	50	
Kenora..	50	
Manitoba..	50	
British Columbia..	51	
Charlottetown Agency—Abstract of Report..	225	
Champlain..	230	
D		
Druid..	229	
Dollard..	231	
E		
Expenditure for 1916-17..	27	
Expenditure and Appropriation, Marine Department, 1916-17..	94	
Expenditure of Marine Branch since Confederation..	114	
Eureka..	229	
Estevan..	234	
G		
Grenville..	232	
H		
Harbour Masters appointed, 1916-17, List of..	27	
Harbours and Harbour Masters, List of, etc..	98	
Harbours and Officers of Harbour Commissions..	105	
Halifax Agency—Abstract of Report of..	227	
Harbour Commissioners', Report of Montreal, P.Q..	236	
" " Quebec, P.Q..	239	
" " Toronto, Ont..	240	
" " Vancouver, B.C..	243	
" " Three Rivers, P.Q..	246	
" " Belleville, Ont..	248	
" " Pictou, N.S..	249	
K		
Kingston Shipbuilding Company, Limited..	9	
L		
Lightkeepers appointed, 1916-17, List of..	26	
Lansdowne..	226	
Lady Laurier..	228	
Lambton..	233	
Leebro..	235	
Live Stock Shipments..	259	
M		
Merchant Marine of World—Standing in 1915..	2	
Merchant Marine War Losses, to March, 1917..	4	
Marine Department—Expenditure and Appropriation, Statement of..	94	
" " Revenue of..	95	
Marine Register Fees collected..	97	
Marine Branch, Expenditure of, since Confederation..	114	
Meteorological Service—Report of Director..	115	
" " Quebec Observatory..	122	
" " St. John, N.B., Observatory..	122	
" " Victoria, B.C., Observatory..	124	
Marine Hospital Service—Report of Medical Superintendent..	126	
Masters and Seamen's Branch—Report of Officer in charge..	160	
" " Navigation Schools..	160	
" " Masters and Mates..	160	
" " Receipts and Expenditure..	162	
" " Pilotage in Quebec and Montreal..	162	
" " Certificates issued..	164	
" " Pilotage..	173	
Montreal Agency—Abstract of Report of..	230	
Montcalm..	229	
Marguerite..	231	
Maggie May..	231	
Montreal Harbour Commission's Report..	236	

TABLE OF CONTENTS

vii

SESSIONAL PAPER No. 21

N

	PAGE.
Navigation in Montreal opens and closes..	27
Newington..	234

P

Port Arthur Shipbuilding Company, Limited..	9
Polson Iron Works, Limited, Toronto, Ont..	9
Ports at which vessels may be registered—	
New Brunswick..	20
Nova Scotia..	20
Ontario..	20
Quebec..	21
British Columbia..	21
Manitoba..	21
Saskatchewan..	21
Yukon..	21
Pilotage—Annual report of officer in charge..	
“ Montreal, P.Q..	173
“ Quebec, P.Q..	177
“ Vancouver, B.C..	183
“ Victoria, B.C..	185
“ Nanaimo, B.C..	188
“ New Westminster, B.C..	190
“ Halifax, N.S..	192
“ Sydney, N.S..	194
“ Louisburg, N.S..	197
“ Pictou, N.S..	199
“ Parrsboro, N.S..	200
“ Pugwash, N.S..	202
“ Richmond, N.S..	205
“ St. Ann, N.S..	206
“ St. John, N.B..	207
“ Miramichi, N.B..	210
“ Restigouche, N.B..	213
“ Bathurst, N.B..	215
“ Caraquet, N.B..	216
“ Harvey and Alma, N.B..	217
“ Richibucto, N.B..	219
“ Shediac, N.B..	220
“ Shepody Basin, N.B..	221
Pictou, N.S., Agency, Abstract of Report of..	228
Prescott Dominion Lighthouse Depot, Abstract of Report of..	232
Parry Sound Agency, Abstract of Report of..	233
Pictou, N.S., Harbour Commission's Report..	249
Port Wardens Reports—List of returns made..	250

Q

Quebec Agency—Abstract of Report of..	228
Quebec Harbour Commission's Report..	239

R

Robert Musgrave, Shipsmith, etc..	10
Revenue, Marine Department, 1916-17, Statement of..	95
Revenue, net, 1916-17..	27
Rouville..	229
Reserve..	231

S

Shipbuilding in the United States..	1
“ in Canada..	1
Shipping of the World, 1915, Statement of..	2
Shipping, Deep Sea—Classification of..	4
Shipping, Merchant Marine—War losses of..	4
Shipbuilding—Canadian Outlook..	5
“ Canadian plants..	8
“ Canadian Vickers, Limited, Montreal, P.Q..	8
“ Port Arthur Shipbuilding Company, Limited, Ont..	9
“ Kingston Shipbuilding Company, Limited, Ont..	9
“ Polson Iron Works, Limited, Toronto, Ont..	9
“ Collingwood Shipbuilding Company, Limited, Ont..	9

S

	PAGE.
Shipbuilding—Thor Iron Works, Limited, Toronto, Ont.	10
“ Sydney Foundry and Machine Works, N.S.	10
“ Robert Musgrave, Shipsmith, North Sydney, N.S.	10
“ Yarrows, Limited, Esquimalt, B.C.	10
“ Nova Scotia Steel and Coal Company, Limited, New Glasgow, N.S.	11
Steam and other vessels being built in Canada	12-15
Steam and sailing vessels, number and tonnage of, on Register	16-17
Season of Navigation, Montreal, opens, closes	27
St. Lawrence River Ship Channel—Report of Superintending Engineer	52
“ “ History of Channel	52
“ “ Accidents in 1916	57
“ “ Maritime Signal Service	58
“ “ Icebreaking, 1916-17	60
“ “ General information, tables, etc.	62
“ “ Cost of Ship Channel to date	64-65
“ “ Dredging operations and work of	66-73
“ “ Dredging, No. c. yds. and cost, 1916	73
“ “ Dredging progress of 1916	73
“ “ In the 30-foot project	75
“ “ In the 35-foot project	75
“ “ Dredging fleet, description of	77-83
“ “ “ summary of	83
Sorel Shipyard—Report of Superintendent	84
“ Repairs to Dominion Steamers, etc.	84
“ Repairs to vessels of Public Works Department	85
“ Repairs to vessels of Construction of Lights branch	86
“ Buoy service	87
“ St. Lawrence Ship Channel investigation	87
“ New construction	87
“ Repairs, general	89
“ Revenue and Expenditure, 1916-17	90
“ Expenditure on account of Ship Channel	92
Sick mariners' dues collected	96
Steamboat inspection dues collected	96
Signal Station, Halifax Citadel	223
St. John, N.B., Agency—Abstract of Report of	226
Sable Island—Report of Superintendent	224
Stanley	225
Sydney, N.S., Agency—Abstract of Report of	228
Shamrock	231
Scout	232
Simcoe	233
Shipping and Discharging of seamen	260

T

Toronto Harbour Commission's Report	240
Three Rivers, P.Q., Harbour Commission's Report	246

V

Vessels, steam and sailing—Number and tonnage of on Register	16-17
Vessels, steam and sailing—Comparison of—1874 to 1916	18-20
Vessels, new built and registered—Comparative statement of—1874 to 1916	22-25
Vessels removed from Registry, etc., in 1916	25
Victoria, B.C., Agency—Abstract of Report of	233
Verchères	231
Vancouver, B.C., Harbour Commission Report	243

W

Wharves and Wharfingers, List of	106
Wharves, piers and breakwaters—leases and rental of, etc.	114
Wrecks and casualties—Report of Wreck Commissioner on	129
“ Statement of investigation into	130
“ Statement of, seagoing coasting	138
“ Statement of, inland waters	154
Wrecking Companies—Quebec Salvage and Wrecking Company	257
“ British Columbia Salvage and Wrecking Company	258

Y

Yarrows, Limited, Esquimalt, B.C.	10
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REPORT

OF THE

DEPUTY MINISTER OF MARINE AND FISHERIES

To the Hon. J. D. HAZEN,
Minister of Marine and Fisheries.

SIR,—I have the honour to submit herewith my report for the fiscal year, ending March 31, 1917.

In last year's report the question of shipbuilding in general in relation to the war was taken up, tables were furnished of the number, tonnage, and speed of the ocean freight carriers of the principal maritime nations, and an account given of methods adopted in a number of foreign countries to stimulate and aid shipbuilding by means of bounties, subsidies, or the free entry of shipbuilding materials.

As the war has progressed, and an ever-increasing amount of the ocean tonnage of the allied nations (now including the United States) and of the neutral nations has been sunk since Germany's declaration of unrestricted submarine warfare, the need of shipbuilding activity throughout the world to supply the wastage has become of paramount importance.

This has been thoroughly realized both in the United States and Canada.

In the United States, since the outbreak of the war, twenty-nine new shipyards have been organized, all of large proportions and thoroughly up to date, of these fifteen are on the Atlantic coast, thirteen on the Pacific, and one on the gulf of Mexico, and substantial improvements and enlargements have been made to twenty-eight existing yards; of the improved yards, fourteen are on the Atlantic and two on the Pacific coast, and of those that have been enlarged, six are on the Atlantic, five on the Pacific, and one on the gulf of Mexico. The lake yards which under normal conditions only build for internal traffic are now building overseas shipping, a good deal of it for Scandinavian owners.

In Canada, since the beginning of the war, the number of privately owned shipyards has been about doubled, a description of some of these yards was given in last year's report; and later, in the present one, will be found an account of the new yards established, and also one of the enlargements and improvements made to existing yards, with a view to meeting the demands for increased tonnage.

Apart from the introduction of the larger yards, there has been in the Maritime Provinces generally, and in Nova Scotia in particular, a revival of the wooden shipbuilding trade, particularly in the form of small schooners with or without auxiliary power; these are quickly and cheaply built, and at anything approaching the present abnormally high freight rates should pay handsomely.

8 GEORGE V, A. 1918

The department, commencing on the 1st of February, 1917, is publishing a monthly bulletin of the shipbuilding activities of all Canadian yards, and in another part of this report there will be found bulletins for the months of February and March (the close of the fiscal year 1916-17), which will give some idea of the recent development of the building of wooden ships in Nova Scotia.

STANDING OF WORLDS MERCHANT MARINE IN 1915.

The following table gives the relative positions of ship owning nations on July 1, 1915, based on steam tonnage owned per head of population.

(This table includes only steamers of 100 tons or upwards, except wooden vessels on the Great Lakes and Russian vessels on the Caspian sea.)

Country.	Population	Total steam Tonnage owned.	Tons per capita.
Norway.....	2,400,000	1,977,809	.824
United Kingdom.....	45,250,000	19,235,705	.425
Denmark.....	2,800,000	803,701	.287
Holland.....	6,000,000	1,498,519	.250
Sweden.....	5,500,000	1,921,796	.185
Greece.....	5,000,000	892,991	.179
Germany.....	65,000,000	4,419,167	.068
United States (sea, lake, and Philippines).....	92,000,000	4,854,748	.053
France.....	40,000,000	1,909,709	.048
Spain.....	20,000,000	885,755	.044
Italy.....	35,000,000	1,513,631	.043
Belgium.....	7,500,000	269,252	.036
Japan.....	50,000,000	1,826,068	.036
Uruguay.....	1,100,000	36,561	.033
Chile.....	3,400,000	100,320	.029
Argentina.....	7,250,000	188,771	.026
Austria-Hungary.....	50,000,000	1,016,695	.020
Cuba.....	2,150,000	35,395	.016
Brazil.....	23,600,000	302,513	.013
Russia.....	164,000,000	851,951	.005
		43,640,957	

Worlds Merchant Marine.—Total tonnage (100 tons or over) July 1, 1915, 49,261,769 from Lloyd's Register.

A glance at this table will show the very high positions based on tons per capita, occupied by the neutral nations. Norway is easily first with a percentage of tons per capita nearly twice that of Great Britain and Ireland; Denmark and Holland, respectively, third and fourth, with a percentage approximately slightly more than one-half that of the United Kingdom; and Sweden, fifth.

The figures for 1916 are not available, but it is doubtful if there is much change in the total tonnage of the different countries, except in the cases of the United States and Japan, whose tonnage has undoubtedly increased both actually and relatively.

Great Britain, France, and the neutral nations are making strenuous and successful efforts to replace all losses suffered during the war.

The Norwegian yards during 1915 and 1916 have been particularly active, and the Dutch are also making every effort to take advantage of the opportunities presented to neutral nations.

SESSIONAL PAPER No. 21

All efforts abroad as elsewhere are of course hampered by the shortage of steel, but this shortage is not likely to continue for any length of time after the restoration of peace, as the enormous demands for munitions of war will then cease.

The revival of wooden shipbuilding activity in the United States has of late been remarkable, and it would almost seem to be in a fair way to rival in amount of tonnage the output of American yards in the days of the "Clipper Ship."

The nearness of large supplies of timber has placed the wooden shipyards of Maine, the Southern States, and the Northwest Pacific coast in a position of great advantage.

This last condition, of course, applies equally and perhaps even to a greater extent to our own Canadian yards in the Maritime Provinces and on the Pacific coast, and it appears that they are making ample use of it.

The enterprise of some of the neutral nations in acquiring maritime business during the war is well illustrated by some figures published by the United States Department of Commerce relating to the Pacific trade.

Before the war British shipping represented 39 per cent, and Japanese 33 per cent of the total, when the United States share was at its lowest point, however, the British tonnage has fallen off to 30 per cent, Japanese tonnage has increased to 55 per cent of the total, and Dutch shipping has jumped from practically nothing at all to 13 per cent.

British tonnage fell from 150,000 gross tons to 84,000, Japanese increased from 135,000 to 155,000, and the Dutch increased from a negligible quantity to 35,000 tons.

Japanese shipyards are now taxed to the limit of their capacity. Orders for ships from abroad have been refused, as the yards have booked orders for Japanese ships that will keep them busy for the next two years.

The same authority gives the following figures with regard to the building of steel merchant vessels in American and British yards.

On October 1, 1916, steel merchant vessels building or under contract to be built in American yards, totalled 417, of 1,454,270 gross tons. On June 30, 1916, "Lloyds Register" reported 439 steel vessels of 1,540,118 gross tons under construction in British shipyards. The American returns cover contracts on which work has not begun, while Lloyds return only covers ships on which construction has actually begun. Besides, "Lloyds Register" only takes note of craft of one hundred tons and over, while the American includes everything.

It may be noted, too, that all the ships turned out from the British yards are for the upbuilding of the British merchant marine, while many of the ships built in the American yards go to foreigners; for instance, in September, 1916, the American yards completed nineteen steel merchant ships of 46,608 gross tons, and made new contracts for forty-seven of 208,686 gross tons; of these about one-half were for Norwegian owners. On the Pacific coast alone, \$35,000,000 worth of tonnage was booked for foreigners, and of course every one of these ships is a potential competitor of American vessels.

8 GEORGE V, A. 1918

CLASSIFICATION OF DEEP-SEA SHIPPING.

The following is a general classification of sea-going steamships: Mail and passenger steamships (express liners), passenger and cargo steamships (combination liners), fast cargo steamships (cargo liners), ordinary cargo steamships (tramps).

These divisions closely resemble those of railway traffic, the first corresponding to passenger trains, the second to passenger and freight, the third to fast freight, and the fourth to slow freight.

Express liners have a small cargo space in proportion to their tonnage, the *Maurelania*, for instance (32,000 tons gross), carries only 1,500 tons of freight; combination liners have of course increased cargo space, and it is computed that out of a total of 25,000 steamships afloat, not more than 1,600 are included in these two classes.

The bulk of ocean steam tonnage is made up of cargo liners and tramps. The first have regular trade routes and regular schedules of sailing are specially built for a particular trade, and kept up to a high standard of efficiency to give shippers the advantage of low insurance rates.

Tramps are vessels rarely exceeding 375 feet in length, with a speed of from 8 to 10 knots an hour, and go anywhere for any sort of cargo. They are hired on charter by merchants at freight rates governed by the state of trade and the supply of shipping. Cargo liners, on the other hand, are usually chartered by intending shippers through brokers at great sea ports, or their agents at smaller ports, and for a specific voyage.

Of the total (roughly) of 44,000,000 tons of the world's steam shipping, two-thirds is taken up by tramp steamers, of which Great Britain owns about 75 per cent.

Coal is the principal export from Britain by tramps, and the return cargoes are usually grain from the Black sea, Argentina, North America, or India; ore and fruit from Spain, timber and cotton from the Gulf ports, nitrate from Chile, and soya beans from Manchuria.

MATERIAL MARINE WAR LOSSES.

Up to the 1st of March, 1917, the total loss from acts of war, and leaving natural causes out of account, amounted to 2,573 vessels, aggregating 4,811,100 gross tons.

Up to the 27th March according to a statement made by Lord Charles Beresford in the House of Lords, there had been sunk during that month, 420,000 tons of allied and neutral shipping, giving a total approximately of 5,231,100 tons of shipping sunk from the date of declaration of war to the 1st of April, 1917.

As the world's total tonnage on July 1, 1915, according to "Lloyds Register" was 49,261,769, it will be found that nearly 11 per cent of it has been destroyed up to April 1, 1917.

British losses up to March 1, 1917, amounted to 2,821,849 tons, the total allied losses up to the same date being 3,492,722 tons, and those of the neutral nations 1,042,770 tons.

The losses of Germany, Austria-Hungary, and Turkey are placed at 293,608 tons; to this now, however, must be added the tonnage of German and Austrian ships seized

SESSIONAL PAPER No. 21

in American harbours. This, as given in the *New York Times* of April 7, is as follows: German vessels ninety-one (including the *Vaterland* of 54,282 gross tons), total tonnage 629,000 gross, value \$100,000,000; Austrian vessels, seized fourteen, gross tonnage 67,807. These bring the total losses of the merchant marine of the central powers up to March 1, 1917, to 990,415 gross tons.

Reverting to the table already given for 1915, and taking the total British tonnage as approximately 20,000,000 tons, and as the losses up to March 1, 1917, were as already stated 2,821,849 tons, it will be found that Britain's losses up to this date amounted to a shade less than 15 per cent of her 1915 tonnage.

This wastage has largely been made good by the work of British shipyards.

The annual report of the Liverpool Steamship Owners Association published December 31, 1916, states that up to that date, and taking into account new ships completed since the outbreak of war, the total tonnage of the British mercantile marine had been reduced by less than 5 per cent.

By far the heaviest losses proportionately have been sustained by the merchant marine shipping of Norway.

Since the outbreak of war up to April 3, 1917, 420 Norwegian ships, totalling 600,000 tons have been sunk, or about one-quarter of the entire Norwegian tonnage. The losses for February and March, 1917, alone, comprised 105 vessels, totalling 166,322 gross tons.

The activities of the Norwegian shipyards, and their placing of orders with American shipbuilding firms, have already been noted, so it is very probable that much of this very serious shortage has been made good.

The following is a list of neutral ships sunk by German submarines since the beginning of the war, up to and including April 3, 1917: Norwegian 410, Swedish 111, Dutch 61, Greek, 50, Spanish 33, American 19, Peruvian 1, Argentine 1, total 686. Neutral vessels that were attacked and escaped: Norwegian 32, Swedish 9, Danish 5, Greek 8, Spanish 2, Argentine 1, Brazillian 1, American 8, total 66.

CANADIAN SHIPBUILDING OUTLOOK.

It can scarcely be disputed that no new form of industry in Canada affords greater possibilities than that of shipbuilding.

The objections usually advanced to the establishment of the steel shipbuilding industry on a large scale in Canada are: (1) That the facilities and experience of Canadian machine shops are not adequate to the production of the engines required for ocean-going ships; and (2) that the present high cost of shipbuilding material makes it an expensive venture. Neither of these objections, of course, applies to the building of wooden ships, which industry, owing to the great and immediate demand for freight carriers, has experienced a remarkable revival, both in the United States and Canada.

The first objection has been of late very much lessened if not altogether removed. The great demand for the output of munitions has given a stimulus to the installation of large machine shops throughout Canada, and work is done on a scale which would have been quite impossible a few years ago.

8 GEORGE V, A. 1918

Although there are in Canada as yet no machine shops exclusively devoted to the production of marine engines; there are to-day in Toronto, Montreal, and Hamilton, and possibly elsewhere, shops able and willing to turn out for an adequate price marine engines for ocean-going ships.

The second objection, namely the high cost of building materials and labour is countered by the fact of the abnormally high rate of the price for freighters, which is not only abnormally high now but still mounting, as the following taken from the *New York Journal of Commerce* of February 27, 1917, will show: "The price of steel steam tonnage for immediate delivery ranges from about \$215 to \$220 a ton, but very few prompt boats are available at that or any price. For delivery in six months the price at which owners are holding their boats is from \$155 to \$165 a ton."

The question which an intending shipbuilder will naturally put to himself is this: will the demand for the products of my shipyard last for a sufficient length of time and at sufficiently high prices to assure me a reasonable return on the necessary outlay? and the following considerations may enable him to come to a right conclusion (1) That since the beginning of the war, and up to March 1, 1917, there have been destroyed by acts of war (and without regard to losses from natural causes) 1,811,100 tons of shipping, and the German submarines are at present sinking ships at the rate of 10 per cent of that total tonnage each month, if continued at this rate for one year, nearly half the mercantile shipping of England will be lost at the end of the year; (2) that the British Cunard steamship line has actually placed orders in the United States for eleven big ships ranging from 7,500 tons to 12,000 tons, and is placing additional orders there, amounting in all to 260,000 tons at a cost of about \$30,000,000; (3) that the merchant ships under construction or under contract for construction in the United States on January 1, 1917, numbered over 400, with a total tonnage exceeding 1,500,000, and that about one-half of this shipping was on foreign account and included nearly every nationality; (4) that the imperative demand of the American Government for the prompt building of over 500,000 tons of war-shipping will largely curtail their capacity for turning out merchant shipping for the next three years; (5) that since the beginning of the present war, new corporations organized for active shipbuilding operations in the United States have been formed with a total capital of \$150,000,000; (6) that as against the selling price of \$40 to \$50 per dead-weight ton for tramp freighters prevailing before the war, present contracts can be had for \$150 per ton, and this for delivery at some time in the future.

There are some other considerations as well, perhaps more nearly affecting Canadian output, ships to the value of \$60,000,000 to be constructed in Canadian yards this year are already under contract. Included in this amount are orders for vessels amounting to \$25,000,000 placed on behalf of the Admiralty through the Imperial Munitions Board, one hundred others are under construction at plants in various cities throughout the Dominion, as well as certain craft regarding which information can not be given. In this situation of the shipbuilding industry necessitated by the demand for tonnage to meet war conditions, the British Controller of Shipping, the British Admiralty, the Imperial Munitions Board, and two departments of the Canadian Government have had a part.

SESSIONAL PAPER No. 21

Additional contracts for the building of merchant ships are likely to be placed, and there is also a likelihood that greater activity in the way of building dry docks will be shown by the shipbuilding industry.

Negotiations are now in progress with a view to introducing the manufacture of steel plates for ships and structural steel in Canadian plants.

At present Canadian steel companies produce only lighter forms of structural steel. They have been engaged moreover of late in filling orders for steel for munitions. However, the munition industry is only a temporary one which will cease to exist at the end of the war. Indeed it is stated an intimation has already been received that the output of large shells may be curtailed, because the great industrial development in Great Britain makes it possible to produce there a sufficient quantity of those projectiles to meet the requirements.

If the rolling of ship plates and the making of structural steel is undertaken by Canadian firms, they may become permanent features of the country's industrial activities.

The question of freight rates after the war is, of course, of the utmost importance to the shipbuilding trade. The present scale of freights will not, of course, continue after the war, and the main question to determine is how soon the break in the freight market will take place, following the cessation of hostilities. Some shipping people hold that the break will be sharp and sudden, others that the very slight additions through new construction now being made to the tonnage of the world will tend to ward off any tendency to a sudden decline when the war is concluded. It is said in support of the latter contention that although some five million tons of German and Austrian shipping now immobilized will be released, the shipping already sunk will decrease the world's fleet by a million tons, while the two million tons of new shipping at present in construction throughout the world is not expected to offset at once the losses due to the war, not to speak of the process of attrition due to natural causes (perils of the sea), which annually removes some one and one-half million tons of shipping from the register.

The prevailing opinion among shipping men seems to be that owing to the depletion of raw materials and foodstuffs caused by the war, not only in belligerent but neutral countries as well, the merchant marine of the world will be taxed to the utmost to make good the shortage, and freight rates will in all probability remain considerably above the normal for some years after the declaration of peace.

In competition with American builders in the construction of steel ships, Canada is faced with the following difficulties: First, steel plates for hulls and boilers are not yet produced in Canada in sufficient quantities; second, steel shapes for the frames of ships, and which are different in section from structural shapes for bridges and buildings, are not now rolled in Canada in sufficient quantities; third the organizing and training of an operating force to successfully establish such an industry requires much time and involves a large outlay.

It would be difficult to exaggerate the importance of shipbuilding as a national undertaking to a country that has, like Canada, an extensive coast line both east and west, superb inland communication by lakes and rivers, and whose export trade is chiefly overseas.

8 GEORGE V. A. 1918

The methods employed by a number of foreign governments to aid their shipbuilding industries were given in last year's report.

It is not to be expected that Canadian yards could turn over the enormous profits at present made by the American, as these now possess every form of material from the iron ore and coal, through all the manufacturing processes to the finished ship, and, save for the increased cost of labour, can turn out as cheaply a ship which to-day sells at \$150 to \$165 a ton, as one which in pre-war days sold at \$50 a ton; but possibly with the aid of one or other of the methods already mentioned as adopted by foreign governments for the purpose of encouraging the growth of a merchant marine, it is not unreasonable to suppose that Canadian shipbuilding might be put on a firm, enduring, and profitable footing.

OPERATIONS OF CANADIAN SHIPBUILDING PLANTS.

In last year's report a description was given of the plants of the following shipbuilding firms operating in Canada, viz.: Western Dry Dock and Shipbuilding Company, Ltd., Port Arthur, Ont., now the Port Arthur Shipbuilding Company, Ltd.; the Collingwood Shipbuilding Co., Ltd., Collingwood, Ont.; the Canadian Vickers, Montreal, Que.; the Kingston Shipbuilding Co., Ltd., Kingston, Ont.; and the Polsons Iron Works, Ltd., Toronto, Ont.

During the year 1916-17 improvements and additions have been made to some of these plants.

CANADIAN VICKERS LIMITED.

This firm has on hand the erection of two additional shipbuilding sheds to be completed in the near future. These will provide, with the sheds already existing, the following berths:—

Berth	No.	Length	Feet long	Feet beam
"	No. 1A	500	"	58
"	No. 1B	500	"	58
"	No. 2A	500	"	70
"	No. 2B	500	"	70
"	No. 3A	350	"	50
"	No. 3B	200	"	50

All these sheds are fitted with overhead crane equipment. A considerable number of additional machines have been installed in the various workshops to cope with the increased output.

The number of hands employed during the year varied from 2,000 to 3,000.

During the season 1916-17 there are being built for Norwegian owners two cargo steamers, 7,000 tons deadweight each of the following dimensions: length B.P., 380 feet; breadth moulded, 49 feet; depth moulded, 30 feet; speed, 10 knots. There have also been completed two submarines for the Italian Government and three for the Russian Government, besides 214 motor launches for the British Government. During the season of navigation of 1916, thirty-two vessels were docked and repaired in the floating ship dock "Duke of Connaught," and fifteen vessels were repaired afloat in the inner basin and harbour. In addition, munitions were turned out for the Imperial Government and the Imperial Munitions Board as follows: 180,000 eighteen-pounder

SESSIONAL PAPER No. 21

shrapnel shells; 230,000 thirteen-pounder shrapnel shells; 164,000 eighteen-pounder shrapnel shells (forgings only); 160,000 4.5-inch H.E. shell (forgings only); 55,000 sixty-pounder H.E. shell (forgings only).

THE PORT ARTHUR SHIPBUILDING CO., LTD.

This plant will shortly be increased by a new building berth with triple overhead cable way on the east side of the dry dock, which when finished will double its present building capacity, permitting of the laying down of four canal-sized steamers, or two maximum lake-type steamers at the same time. This new berth will be completed in June, 1917.

During the fiscal year 1916-17 two steel steamers of the following dimensions were built and delivered: length B.P., 251 feet; breadth, 43.6 feet; gross tonnage, 2,436; speed, $9\frac{1}{2}$ knots.

There are in course of construction two steamers, duplicates of the above, to be delivered in July, 1917.

For the Imperial Munitions Board, contracts have been undertaken for five steel steamers of the following dimensions: length B.P., 251 feet; breadth, 43.6 feet; dead-weight carrying capacity, 3,400 tons; speed, $10\frac{1}{4}$ knots; two of these are to be delivered before the close of navigation in the present year, and three during the summer of 1918; six trawlers are also to be completed this year for the Director of Ship Construction.

KINGSTON SHIPBUILDING CO., LTD.

A new punching machine, and a new air compressor have been added to this plant, which is at present building four trawlers for the Naval Service.

POLSON IRONWORKS, LIMITED, TORONTO, ONT.

No changes in this plant. At present engaged in building two cargo boats for Norwegian owners, and in work for the Canadian and British Governments through the Imperial Munitions Board.

COLLINGWOOD SHIPBUILDING CO., LTD.

This plant, which remains pretty much the same as previously described, is now capitalized at \$2,600,000. The vessels completed during the fiscal year 1916-17 were: ss. *Icolite*, 250 feet by 43.6 feet by 20 feet; 2,060 gross tons; 800 I.H.P.; speed, $9\frac{1}{2}$ knots; built for the Imperial Oil Company, Toronto; ss. *Carnolite*, duplicate of above; ss. *Westmount*, 550 feet by 58 feet by 31 feet; 7,392 gross tons; 2,400 I.H.P.; speed, 12 knots. Vessels at present building: s.s. *Ragenolite*, oil tank steamer, 250 feet by 43.9 feet by 25 feet; 1,200 I.H.P.; gross tonnage 2,500; speed $9\frac{1}{2}$ knots; for the Imperial Oil Company, Toronto; s.s. *Torontolite*, similar to above, for the International Petroleum Company, Toronto; ships Nos. 51 and 52, 251 feet by 43.6 feet; for the Imperial Munitions Board, and six complete trawlers for the Department of the Naval Service.

8 GEORGE V, A. 1918

THOR IRON WORKS, LTD., TORONTO.

This company was organized in 1916 for the building of ships; the plant comprises two docks with overhead cranes on each. The cranes have a span of 68 feet, 56 feet lift, capacity 20 tons. The plant covers $4\frac{1}{2}$ acres. The company have at present contracts for four 4,300-ton freighters, length O.A. 261 feet, beam 43.6 feet, draught 24 feet, speed 13 knots, besides two trawlers for the Naval Service.

THE SYDNEY FOUNDRY AND MACHINE WORKS, SYDNEY, C.B.

This repairing plant for vessels has a floating dry dock of 125 by 49 feet, inside measurement, shortly to be increased to 150 feet in length; there are two wharves of 300 feet frontage each, with a depth of 30 feet I.W.

The plant consists of foundry, machine shop, boiler shop, pattern shop, and forge equipped to build marine engines, boilers, winches, and all ship's fittings, and supplied with the latest equipment for oxy-acetylene and electric cutting and welding, and with cylinder-boring machines, portable pneumatic rivetting outfits, etc., and all tools requisite for up-to-date repairing work.

ROBERT MUSGRAVE, SHIPSMITH, ETC., NORTH SYDNEY, C.B.

An establishment for the temporary and permanent repairs of ships, has foundry employing seventy mechanics, with a small marine railway in connection with it of 300 tons capacity, machine shop 120 feet by 50 feet, two stories high, both of these buildings being of solid concrete. Ships' blacksmith shop 50 feet by 45 feet, also of concrete. The plant includes four lathes, large plainer, 6-foot radial drill, and three other large post drills, set of combined shears and punch, capable of punching 1-inch plates, two sets of plate rolls capable of rolling plates 9 feet wide and $1\frac{1}{2}$ inch thick, large steam hammer, also electric hammer for lighter work, compressed air outfit running at least three drills and three hammers at the same time.

Last October, this concern repaired the ss. *Huftero*, in collision with *Storstad* in Sydney harbour, putting in twenty new plates, five new between-decks, new hawse pipes, and a new forecastle head, etc., at an outlay of \$35,000.

YARROWS LIMITED, ESQUIMALT, B.C.

The works of this company are at Lang cove, Esquimalt harbour, adjoining the site of the proposed government dry dock, and cover an area of $8\frac{1}{2}$ acres.

In connection with the work is a marine railway for accommodation of vessels up to 312 feet in length and 3,000 gross tonnage, and a wharf 500 feet long, on both sides of which vessels can be moored for repairs. The wharf is equipped with shear-legs capable of lifting 60 tons, a 10-ton derrick scow with a 90-foot boom, and other floating equipment.

The plant comprises: a foundry 120 feet by 70 feet, capable of making castings up to 10 tons, with all the modern equipment; a pattern shop 50 feet by 25 feet, with turning lathe and planing machine electrically driven by a $7\frac{1}{2}$ -H.P. Packard electric motor; blacksmith shop 100 feet by 83 feet, with all arrangements for forge work,

SESSIONAL PAPER No. 21

including a 1,200-pound steam hammer, 7½ inches diameter, by 26-foot stroke; forges for both coal and oil firing; machine shop; one story iron-clad building 100 feet by 48 feet; motive power supplied by electric motors; and well equipped with lathes, drills, etc.

Joiner shop 130 feet by 40 feet has a mould loft above and a saw-mill below fitted with circular, jig, and band saws, planing machine, tenon and mortice machines, electric drills, etc., two 30-I.H.P. electric motors supply the driving power for this building, shipbuilding berth, and plater shed. The berth will accommodate a vessel 300 feet by 50 feet, and is equipped with an overhead trolley. There is space for the installation of a second building berth. Stores and electrical shop: this is a two-story building 75 feet by 35 feet, in which is stocked a complete supply of all the materials, fittings, and stores necessary for the building of steamships.

The oxy-acetylene welding plant is installed in a galvanized-iron building 22 feet by 14 feet, completely fitted out for the manufacture and use of the gas employed in this process of cutting and welding. The gas is piped all over the plant and to the various shops and wharves.

Compressor sheds are supplied with five electrically driven compressors producing 210 horse-power, and one 30 horse-power steam compressor. The air system is carried into every part of the yard. There is also a floating steam compressor plant of 25 horse-power, combined with a pile driver, which can lie alongside vessels too large to come to any of the wharves, and supply air for working pneumatic tools.

The vessels built at this plant include the steamers *Princess Beatrice*, *Princess Royal*, and *Princess Maquinna*, tug *Nanoose*, and two large steel transfer barges, all for the C.P.R. coast service. The hydrographic steamer *Lillooet* and quarantine steamer *Madge* were built for the Dominion Government. During the past year two steel stern-wheel shallow-draught vessels were built for service in India, and two more are now building. The C.P.R. steamer *Princess Mary* was lengthened 38 feet, and the *Mariposa*, passenger steamer of the Atlantic Steamship Company, had her interior completely rebuilt, after being wrecked and submerged. The Grand Trunk Company steamer *Prince Rupert* is at present being repaired in the dry dock, the bottom for a length of 180 feet having been renewed.

Naval repairs have been effected at the Esquimalt yard for the Imperial, Canadian, and Japanese naval authorities.

The firm has been very successful in the manufacture of manganese bronze propellers and blades, also in converting coal fuel installation into oil fuel, the coast fleet of the Grand Trunk Steamship Company having been converted from coal to oil-fuel burning boats at the works.

NOVA SCOTIA STEEL AND COAL CO., LTD., NEW GLASGOW, N.S.

This company's plant includes two building berths served by three electric cranes covering the entire area of the berths. The shop work, such as bending frames, rivetting, etc., is done in the shops of the Eastern Car Company close to the building site; that company also supplies the yard with electric power for the cranes, lighting, etc., and compressed air for pneumatic rivetting, caulking, etc.

Three boats are now under construction, the first of 1,800 tons deadweight and the other two of 2,500 tons deadweight each.

8 GEORGE V, A. 1918

Other shipbuilding firms operating in Canada are: George Davie & Son, Levis, Que.; the Wallace Shipyard Limited, Vancouver, B.C.; the Cameron Genoa Mills Company, Limited, Victoria, B.C.; Vancouver Shipyard Limited, Vancouver, B.C.; and Coughlan & Sons, Vancouver, B.C.

The department as already mentioned, beginning in February, 1917, is publishing monthly bulletins of Canadian shipbuilding operations: herewith follow the returns for the months of February and March, 1917 (the close of the fiscal year 1916-17).

STEAM, SAILING, GAS AND UNRIGGED VESSELS BUILDING IN CANADA FOR MONTH ENDING 28TH FEBRUARY, 1917.

STEAMERS ATLANTIC COAST

		Gross Tonnage.	Material.
C. J. Clarke & Vickers Limited Montreal	2 cargo steamers...	9,400	Steel.
	1 hopper barge.	2,360	Steel.
Davie Shipbuilding & Repairing Co., Levis.	1 car ferry.....	4,000	Steel.
New Scotland Steel & Coal Co., New Glasgow, N. S.	2 cargo steamers...	2,200	Steel.
Shelburne Shipbuilders Limited, Shelburne, N. S.	1 cargo steamer..	320	Wood.
Robert Rutledge Ship Harbour, N. S.	1 cargo steamer.....	325	Wood.
Sincennes-McNaughton Lines Sorel, Que...	1 tug.	410	Wood.*
Total.....	9	19,015	

STEAMERS GREAT LAKES

Port Arthur Shipbuilding & Repairing Co., Port Arthur, Ont....	4 cargo steamers...	8,874	Steel.
C. J. Clarke & Vickers Limited, Collingwood, Ont.	1 cargo steamer.	7,988	Steel.
	2 oil tankers.....	4,800	Steel.
Polson Iron Works Limited Toronto, Ont...	2 cargo steamers.....	4,400	Steel.
Thor Iron Works Limited Toronto, Ont.	2 cargo steamers..	5,000	Steel.
Georgian Bay Shipbuilding & Repairing Co., Midland	1 tug.....	40	Wood.
Total.	12.	31,102	

STEAMERS PACIFIC COAST

George Davie & Son Vancouver, B.C.	3 cargo steamers..	13,500	Steel.
Wallace Shipyard Limited Vancouver, B.C..	4 cargo steamers.....	17,500	Steel.
	2 frght. & pass. steamers	11,000	Steel.
	8 auxiliary schrs.	16,000	Wood.
Cameron-Genoa Mills Limited Victoria, B.C....	*3 auxiliary schrs.	6,000	Wood.
Vancouver Shipyards Limited Vancouver, B.C..	2 tugs..	120	Wood.
W. R. Menchion Vancouver, B.C.	1 tug.	100	Wood.
Yarrows Limited Esquimalt, B.C....	1 stern wheeler..	400	Wood.
H. Vollmers Nanaimo, B.C...	1 gasoline boat.	9	Wood.
Total..	25	64,629	

*motor engines.

SUMMARY

	Number.	Gross Tonnage.	Steel.		Wood.	
			Number.	Gross Tonnage.	Number.	Gross Tonnage.
Atlantic Coast..	9	19,015	6	17,960	3	1,055
Great Lakes	12	31,102	11	31,002	1	40
Pacific Coast	25	64,629	9	41,000	16	23,629
Total	46	114,746	26	90,062	20	24,684

SESSIONAL PAPER No. 21

STEAM, SAILING, GAS AND UNRIGGED VESSELS BUILDING IN CANADA FOR MONTH ENDING
28TH FEBRUARY, 1917—*Concluded.*

SAILING VESSELS—ATLANTIC COAST.

		Gross Tonnage.	Material.
J. W. Comeau, Comeauville, N.S.	1 Schooner..	329	Wood.
Dr. McDonald, Meteghan, N.S.	1 schooner.....	544	Wood.
John Deveau, Meteghan, N.S.	1 schooner.....	400	Wood.
Innocent Comeau, Little Brook, N.S.	1 schooner.....	240	Wood.
Omer Blinn, Grosses Coques, N.S.	1 schooner.....	250	Wood.
Theriault Bros., Belliveau Cove, N.S.	1 schooner.....	350	Wood.
J. N. Rafuse, Bridgewater, N.S.	3 schooners.....	755	Wood.
Leary & Sons, Bridgewater, N.S.	2 schooners.....	165	Wood.
Robar Brothers, Bridgewater, N.S.	1 schooner.....	130	Wood.
William Naugler, Bridgewater, N.S.	1 schooner.....	300	Wood.
W. R. & C. A. Huntley, Parrsboro, N.S.	1 schooner.....	490	Wood.
Wagstaff & Hatfield, Port Greville, N.S.	1 schooner.....	369	Wood.
G. M. Cochrane, Fox River, N.S.	3 schooners.....	1,249	Wood.
James, E. Pettis Spencer's island, N.S.	1 schooner.....	425	Wood.
T. K. Bentley Advocate Harbour, N.S.	1 schooner.....	449	Wood.
The Esther Harkinson Shipping Co.; Weymouth, N.S.	1 schooner..	210	Wood.
Peter McIntyre, Saint John, N.B.	1 schooner.....	400	Wood.
Souther Salvage Co., Liverpool, N.S.	2 schooners.....	530	Wood.
Carried forward..	24	7,786	

SAILING VESSELS—ATLANTIC COAST.

		Gross Tonnage.	Material.
Brought forward.....	24	7,786	
J. Steadman Gardner, Liverpool, N. S.	1 schooner.....	340	Wood.
R. S. McLeod, Liverpool, N. S.	1 schooner.....	350	Wood.
Albert Parsons, Cheverie, N. S.	1 schooner.....	350	Wood.
George A. Cox, Shelburne, N. S.	1 schooner.....	500	Wood.
W. C. McKay & Son, Shelburne, N. S.	4 schooners.....	610	Wood.
Estate Joseph McGill, Shelburne, N. S.	1 schooner.....	167	Wood.
J. N. Rafuse, Conquerall Bank, N. S.	1 schooner.....	275	Wood.
J. Ernst & Son, Mahone Bay, N. S.	2 schooners.....	520	Wood.
John McLean & Sons, Mahone Bay, N. S.	1 schooner.....	97	Wood.
Smith & Rhuland, Lunenburg, N. S.	3 schooners.....	332	Wood.
Lewis Hardwood Co., Lewiston, N. S.	2 schooners.....	1,000	Wood.
John Brown, Public Landing, N. B.	1 schooner.....	100	Wood.
John Edgar, Moss Glen, N. B.	1 schooner.....	500	Wood.
E. F. Williams, Dartmouth, N. S.	1 schooner.....	350	Wood.
Le Chantier de St. Laurent Ltée., St. Laurent, Que.	2 schooners.....	2,600	Wood.
Charles Griffin, Isaacs Harbour, N. S.	1 schooner.....	40	Wood.
The J. A. Balcom Co., Ltd., Margaretsville, N. S.	1 schooner.....	400	Wood.
James X. Lenteigne, Lower Caraquet, N. B.	1 schooner.....	28	Wood.
Meteghan Marine Railway and Shipbuilding Co., Meteghan, N. S.	1 schooner.....	470	Wood.
Total	51	16,516	

8 GEORGE V, A. 1918

STEAM, SAILING, GAS AND UNRIGGED VESSELS BUILDING IN CANADA FOR MONTH ENDING 31ST MARCH, 1917.

STEAMERS—ATLANTIC COAST.

		Gross Tonnage.	Material.
Canadian Vickers Limited, Montreal, Que.....	2 cargo steamers.....	9,400	Steel.
	1 hopper barge.....	2,360	Steel.
	4 trawlers.....	1,600	Steel.
Davie Shipbuilding and Repairing Co., Levis.....	1 car ferry.....	5,000	Steel.
Nova Scotia Steel and Coal Co., New Glasgow, N.S.	2 cargo steamers.....	2,200	Steel.
Shelburne Shipbuilders Limited, Shelburne, N.S.	1 cargo steamer.....	320	Wood.
Robert Rutledge, Sheet Harbour, N.S.....	1 cargo steamer.....	325	Wood.
Quebec Shipbuilding and Repairing Co., St. Laurent.			
Isle of Orleans, Que.....	*2 auxiliary schooners.....	2,490	Wood.
Sincennes-McNaughton Lines, Sorel, Que.....	1 tug.....	410	Wood.
Total.....	15	24,105	

*Motor engines.

STEAMERS—GREAT LAKES.

Port Arthur Shipbuilding and Repairing Co., Limited, Port Arthur, Ont.....	4 cargo steamers.....	9,748	Steel.
Collingwood Shipbuilding Company, Collingwood Ont.....	1 cargo steamer.....	7,988	Steel.
Polson Iron Works Limited, Toronto, Ont.....	2 oil tankers.....	4,800	Steel.
Thor Iron Works Limited, Toronto, Ont.....	2 cargo steamers.....	4,400	Steel.
Georgian Bay Shipbuilding and Repairing Co., Midland, Ont.....	2 cargo steamers.....	5,000	Steel.
	1 tug.....	40	Wood.
Total.....	12	31,976	

STEAMERS—PACIFIC COAST.

Canadian Pacific, Vancouver, B.C.....	3 cargo steamers.....	13,500	Steel.
Wallace Shipyards Ltd., North Vancouver, B.C....	4 cargo steamers.....	17,500	Steel.
	2 frt. and pass. steamers..	11,000	Steel.
	*6 auxiliary schooners....	12,000	Wood.
Cameron-Genoa Mills Ltd., Victoria, B.C.....	*3 auxiliary schooners....	6,000	Wood.
Vancouver Shipyards Ltd., Vancouver, B.C.....	2 tugs.....	120	Wood.
W. R. MacLean, Vancouver, B.C.....	1 tug.....	100	Wood.
Vancouver Island L. & Navigation Co., B.C.....	1 stern-wheeler.....	400	Wood.
British Yukon Navigation Co., Vancouver, B.C....	1 pass. and frt. river str..	1,000	Wood.
	*1 gasoline boat.....	100	Wood.
H. A., Nanaimo, B.C.....	*1 gasoline boat.....	9	Wood.
Total.....	25	61,729	

SUMMARY.

	Number.	Gross Tonnage.	Steel.		Wood.	
			Number.	Gross Tonnage.	Number.	Gross Tonnage.
Atlantic Coast.....	15	24,105	10	20,560	5	3,545
Great Lakes.....	12	31,976	11	31,976	1	40
Pacific Coast.....	25	61,729	9	42,000	16	19,729
Total.....	52	117,810	30	94,496	22	23,314

SESSIONAL PAPER No. 21

STEAM, SAILING, GAS AND UNRIGGED VESSELS BUILDING IN CANADA FOR MONTH ENDING
31ST MARCH, 1917—*Concluded.*

SAILING VESSELS—ATLANTIC COAST.

		Gross Tonnage.	Material.
J. W. Comeau, Comeauville, N.S.	1 schooner.....	329	Wood.
Dr. McDonald, Meteghan, N.S.	1 schooner.....	544	Wood.
John Deveau, Meteghan, N.S.	1 schooner.....	400	Wood.
Innocent Comeau, Little Brook, N.S.	1 schooner.....	250	Wood.
Omer Blinn Grosses Coques, N.S.	1 schooner.....	350	Wood.
Therault Bros., Belliveau Cove, N.S.	1 schooner.....	350	Wood.
J. N. Rafuse, Bridgewater, N.S.	3 schooners.....	755	Wood.
Leary & Sons, Bridgewater, N.S.	2 schooners.....	265	Wood.
Robar, Brothers Bridgewater, N.S.	1 schooner.....	130	Wood.
William Naugler, Bridgewater, N.S.	1 schooner.....	300	Wood.
W. R. & C. A. Huntley, Parrsboro, N.S.	1 schooner.....	490	Wood.
Wagstaff & Hatfield, Port Greville, N.S.	1 schooner.....	400	Wood.
G. M. Cochrane, Fox River, N.S.	3 schooners.....	1,349	Wood.
James E. Pettis, Spencer's island N.S.	1 schooner.....	425	Wood.
T. K. Bentley, Advocate Harbour, N.S.	1 schooner.....	449	Wood.
Esther Harkinson Shipping Co. Belliveau Cove, N.	1 schooner.....	360	Wood.
Peter McIntyre, Saint John, N.B.	1 schooner.....	450	Wood.
Southern Salvage Co., Liverpool, N.S.	2 schooners.....	530	Wood.
J. Steadman Garner, Liverpool, N.S.	1 schooner.....	340	Wood.
	25.....	8,466	

SAILING VESSELS—ATLANTIC COAST.

		Gross Tonnage.	Material.
Brought forwd.....	25.....	8,466	
W. K. McKean Co., Liverpool, N.S.	1 schooner..	400	Wood.
Albert Parsons, Walton, N.S.	1 schooner..	400	Wood.
Geo. A. Cox, Shelburne, N.S.	1 schooner..	200	Wood.
W. C. McKay & Son Shelburne, N.S.	4 schooners	620	Wood.
Estate Joseph McGill Shelburne, N.S.	1 schooner..	160	Wood.
J. Ernst & Son Hahone Bay, N.S.	2 schooners.	520	Wood.
John McLean & Sons, Mahone Bay, N.S.	1 schooner	95	Wood.
Smith & Rhuland, Lunenburg, N.S.	3 schooners.	332	Wood.
Lewis Hardwood Co., Lewiston, N.S.	2 schooners.	1,000	Wood.
John Brown, Public Landing, N.S.	1 tow barge.	50	Wood.
E. F. Williams Dartmouth, N.S.	1 schooner	350	Wood.
Quebec Shipbuilding & Repairing Co., St. Laurent, Que.	2 schooners..	2,600	Wood.
Charles Griffin, Isaac Harbour, N.S.	1 schooner	40	Wood.
J. A. Balcom Co. Ltd., Margaretsville, N.S.	1 schooner..	409	Wood.
James X. Lenteigne, Lower Caraquet, N.B.	1 schooner..	28	Wood.
Meteghan Railway & Shipbuilding Co., Meteghan, N.S.	1 schooner...	470	Wood.
Shelburne Shipbuilders, Limited, Shelburne, N.S.	1 schooner..	350	Wood.
	50.....	16,481	
Robert Rutledge, Sheet Harbour, N.S....	1 schooner.	300	Wood.
J. W. Raymond, Port Maitland, N.S.....	1 schooner	375	Wood.
Robin, Jones & Whitman, Liverpool, N.S.	1 schooner.	340	Wood.
Totals.....	53.....	17,496	

STATISTICS OF CANADIAN SHIPPING.

STATEMENT showing the number of Vessels and Number of Tons on the Registry Books of the Dominion of Canada, on December 31, 1916.

Ports.	SAILING VESSELS			STEAM VESSELS		
	No.	Gross Tonnage.	Net Tonnage.	No.	Gross Tonnage.	Net Tonnage.
Ontario.						
Amherstburg...	7	1,518	1,484	13	950	512
Bellevue...	3	241	217	11	241	144
Bowmanville...	2	344	316			
Brimley...	2	842	771	24	1,380	920
Chatham...	7	506	586	11	934	510
Collingwood...	2	430	402	1	756	540
Georgetown...	5	1,122	1,122	56	20,254	13,743
Godfray...				5	170	107
Deseronto...	7	403	370	6	144	81
Dunnville...	1	87	57			
Fort William...	1	413	413	3	4,218	2,561
Georgetown...	16	1,155	1,155	31	1,589	1,056
Hamilton...	7	807	780	26	20,085	12,981
Kitchener...	7	580	580	86	3,028	1,913
Kingston...	68	10,986	10,335	117	10,710	6,227
Lindsay...	19	1,224	1,224	28	626	416
Midland...	7	3,681	3,166	40	35,882	23,739
Norfolk...	1	122	122			
Oakville...	1	26	26			
Ottawa...	153	20,689	19,761	287	44,824	24,012
Owen Sound...	7	2,326	1,995	37	3,401	2,295
Peterborough...	21	1,631	1,631	59	1,310	883
Pilotage...	8	2,435	2,230	14	5,000	3,366
Port Arthur...	4	18,760	18,084	75	49,901	25,115
Port Bessie...	1	65	65	10	200	191
Port Dover...	1	217	217	16	536	353
Port Hope...	1	646	646	1	110	75
Port Stanley...				27	1,146	751
Port Talbot...	6	1,616	1,488	13	2,967	1,542
Port Weller...	14	3,547	3,188	40	4,008	21,961
Port Wren...	1	96	96	11	410	178
Sault Ste. Marie...	1	8,880	7,935	51	20,900	12,980
St. Catharines...	8	6,553	5,944	54	2,045	1,336
Simcoe...	1	36	36	1	35	18
Toronto...	83	26,607	24,840	309	88,945	55,663
Wallaceburg...	15	1,935	1,876	13	600	410
Windsor...	1	190	190			
Yamouche...	30	4,697	2,940	22	7,305	4,110
	640	112,187	101,567	1,507	353,439	221,520
Prince Edward Island.						
Charlottetown...	128	7,545	7,166	27	7,950	3,486
British Columbia.						
New Westminster...	107	12,013	12,005	207	610	5,007
Port Moody...	1	2,507	2,355	31	640	1,872
Vancouver...	1	31,752	31,262	13	52,027	2,781
Victoria...	110	3,100	21,188	275	65,884	30,511
	4	6,000	50,711	426	120,900	78,771
Alberta.						
Prince Albert...	1	145	145	1	100	54
Manitoba.						
Winnipeg...	1	3,394	3,200	10	1,000	550
Saskatchewan.						
Regina...	1	200	200	10	2,716	1,750

SESSIONAL PAPER No. 21

STATISTICS OF CANADIAN SHIPPING—*Continued.*

STATEMENT showing the number of Vessels and number of Tons on the Registry Books of the Dominion of Canada, on December 31, 1916—*Concluded.*

Ports.	SAILING VESSELS.			STEAM VESSELS.		
	No.	Gross Tonnage.	Net. Tonnage.	No.	Gross Tonnage.	Net. Tonnage.
<i>New Brunswick.</i>						
Chatham....	395	8,188	8,027	98	3,909	2,388
Dorchester...	3	355	340	2	8	6
Moncton..	6	338	315	2	119	60
Richibucto...	23	572	516	16	298	220
Sackville..	4	302	265	3	65	45
St. Andrews..	160	2,932	2,572	36	719	482
St. John.....	219	23,075	22,299	107	19,564	12,612
	810	35,762	34,334	264	24,682	15,813
<i>Nova Scotia.</i>						
Amherst.....	3	148	131	3	168	95
Annapolis Royal...	27	3,022	2,686	7	362	203
Arichat.....	98	2,562	2,527	18	305	273
Barrington	78	1,992	1,932	14	265	225
Canso.....	44	811	811	2	28	26
Digby	95	3,621	3,421	14	402	284
Guysboro.....	7	365	353			
Halifax..	324	13,556	13,113	121	17,674	10,148
Liverpool	54	4,523	4,059	27	1,794	885
Lunenburg..	283	26,292	21,826	115	2,509	1,977
Maitland..	11	1,501	1,297	1	88	59
Parrsboro.....	44	10,560	9,657	8	810	524
Pictou.....	13	723	668	18	620	392
Port Hawkesbury.	65	1,452	1,436	4	73	65
Port Medway.....	11	1,014	948	5	76	71
Shelburne.....	74	5,300	4,682	17	694	511
Sydney	87	5,154	4,803	40	6,401	3,987
Truro.....				9	244	178
Weymouth.	21	1,918	1,717	1	18	07
Windsor.....	39	17,646	16,235	17	3,654	2,004
Yarmouth.....	202	4,130	4,059	43	10,442	4,777
	1,580	106,290	96,361	484	46,627	26,691
<i>Quebec.</i>						
Gaspé.	18	1,004	923			
Magdalen Islands...	13	525	516	3	506	249
Montreal.	323	87,341	84,650	349	178,460	111,062
Paspébiac..	17	291	271	5	115	73
Quebec..	471	39,391	38,377	167	33,935	19,594
Sorel.	37	12,687	11,606	49	12,943	6,448
	879	141,239	136,343	573	225,959	137,426

RECAPITULATION.

New Brunswick	810	35,762	34,334	264	24,682	15,813
Nova Scotia.....	1,580	106,290	96,361	484	46,627	26,691
Quebec..	879	141,239	136,343	573	225,959	137,426
Ontario	610	113,387	106,367	1,507	353,439	221,309
Prince Edward Island.....	128	7,545	7,166	27	7,557	3,486
British Columbia.....	432	68,665	66,751	1,255	128,976	78,774
Manitoba.....	17	2,394	3,394	78	8,567	5,559
Yukon Territory.....	1	556	556	10	2,716	1,739
Saskatchewan..	1	145	145	4	660	384
	4,458	476,983	451,417	4,202	799,183	491,181

8 GEORGE V, A. 1918

COMPARATIVE STATEMENT showing the number of Vessels and number of Tons on the Registry Books of the Dominion of Canada, on the 31st December, in each Year from 1874 to 1916 both inclusive.

Province.	1874.		1875.		1876.		1877.		1878.	
	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
New Brunswick	1,144	294,741	1,133	307,926	1,154	324,513	1,133	329,457	1,142	335,965
Nova Scotia....	2,787	479,669	2,786	505,144	2,867	529,252	2,961	541,579	3,003	553,368
Quebec.....	1,837	218,946	1,831	222,965	1,902	228,502	1,951	248,399	1,676	248,349
Ontario.....	815	113,008	825	114,990	889	123,947	926	131,761	958	135,440
P. E. Island....	312	48,388	335	50,677	338	59,692	342	55,547	322	54,250
B. Columbia....	35	3,611	40	3,685	40	3,809	43	3,479	51	4,482
Manitoba....			2	178	2	178	6	246	17	1,161
Total.....	6,930	1,158,363	6,952	1,205,565	7,192	1,260,893	7,362	1,310,468	7,169	1,333,015
Province.	1879.		1880.		1881.		1882.		1883.	
	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
New Brunswick.	1,135	340,491	1,097	336,976	1,087	333,215	1,065	308,980	1,107	315,906
Nova Scotia.....	2,975	552,159	2,977	550,448	3,025	558,911	3,026	546,778	3,037	541,715
Quebec.....	1,975	246,025	1,889	233,341	1,830	224,936	1,754	215,804	1,739	216,557
Ontario.....	1,006	136,987	1,042	137,481	1,081	139,998	1,112	137,061	1,133	140,972
P. E. Island.....	298	49,807	288	45,931	273	45,410	248	41,684	241	49,446
B. Columbia....	60	4,701	63	5,049	74	6,296	84	7,687	94	9,046
Manitoba.....	22	1,924	21	1,992	24	2,130	23	2,783	24	2,778
Total.....	7,471	1,332,094	7,377	1,311,218	7,394	1,310,896	7,312	1,260,777	7,375	1,276,440
Province.	1884.		1885.		1886.		1887.		1888.	
	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
New Brunswick.	1,096	308,132	1,060	288,589	1,042	269,224	1,027	255,126	1,009	239,332
Nova Scotia....	2,942	541,648	2,988	541,832	2,929	526,921	2,845	498,878	2,851	485,709
Quebec.....	1,628	202,842	1,631	203,635	1,650	232,556	1,586	189,064	1,498	178,520
Ontario.....	1,184	142,387	1,223	144,487	1,248	140,929	1,275	139,548	1,330	139,502
P. E. Island.....	234	39,213	227	36,040	225	30,658	225	29,031	218	26,586
B. Columbia....	116	11,403	123	11,834	134	11,900	149	12,789	167	14,249
Manitoba.....	55	5,722	63	5,439	65	5,578	71	5,871	69	5,744
Total.....	7,255	1,253,747	7,315	1,231,856	7,293	1,217,766	7,178	1,130,307	7,142	1,089,642
Province.	1889.		1890.		1891.		1892.		1893.	
	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
New Brunswick.	1,013	218,873	981	209,460	969	193,193	946	181,779	1,010	156,086
Nova Scotia....	2,855	464,431	2,793	464,194	2,778	461,758	2,731	425,690	2,715	396,263
Quebec.....	1,455	168,500	1,399	164,003	1,404	162,330	1,408	162,638	1,426	161,121
Ontario.....	1,352	141,839	1,312	138,738	1,345	138,914	1,347	141,750	1,370	146,665
P. E. Island.....	224	25,506	231	26,080	195	23,316	196	22,706	188	20,970
B. Columbia....	176	15,241	190	16,024	246	19,767	298	23,448	315	24,900
Manitoba.....	77	6,091	79	6,475	78	6,197	81	6,118	89	6,544
Total.....	7,152	1,040,481	6,991	1,024,974	7,015	1,005,475	7,007	964,129	7,113	912,539

SESSIONAL PAPER No. 21

COMPARATIVE STATEMENT showing the number of Vessels and number of Tons on the Registry Books of the Dominion of Canada, etc.—*Continued.*

Province.	1894.		1895.		1896.		1897.		1898.	
	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
New Brunswick.	1,003	136,257	975	122,417	964	115,506	923	103,584	903	89,257
Nova Scotia. . . .	2,710	371,432	2,683	343,356	2,669	317,526	2,204	283,056	2,167	262,176
Quebec.	1,427	160,590	1,454	158,776	1,469	158,649	1,480	158,077	1,378	144,447
Ontario.	1,480	148,525	1,508	148,609	1,525	146,522	1,424	135,349	1,452	134,180
P. E. Island.	191	19,650	190	19,323	174	16,540	174	15,812	178	15,979
B. Columbia.	336	26,455	346	25,988	363	26,622	364	28,604	444	40,304
Manitoba.	98	6,715	106	7,307	115	7,934	115	7,272	121	7,439
Yukon District. . . . .	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total.	7,245	869,624	7,262	825,776	7,279	789,299	6,684	731,754	6,643	693,782

	1899.		1900.		1901.		1902.		1903.	
	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
New Brunswick.	920	86,288	927	78,708	915	75,293	917	64,605	929	59,508
Nova Scotia. . . .	2,121	243,457	2,121	226,817	1,980	214,560	2,037	212,967	2,069	216,053
Quebec.	1,375	144,586	1,247	138,136	1,265	142,664	1,288	136,660	1,228	138,570
Ontario.	1,488	135,234	1,610	141,112	1,635	145,227	1,699	156,449	1,778	169,086
P. E. Island.	171	14,660	176	14,251	180	14,729	156	13,464	164	13,739
B. Columbia.	488	44,415	515	51,095	676	62,102	584	58,292	639	76,215
Manitoba.	126	9,108	128	7,147	130	7,445	139	7,536	139	7,695
Yukon District. . .	9	1,604	11	2,268	11	2,463	16	2,640	14	2,281
Saskatchewan. . . . .	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total.	6,698	679,352	6,735	659,534	6,792	664,483	6,836	652,613	7,020	683,147

	1904.		1905.		1906.		1907.		1908.	
	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
New Brunswick.	933	54,855	938	49,145	939	44,471	927	69,463	938	66,402
Nova Scotia.	2,066	211,972	2,121	198,976	2,159	187,328	2,074	173,950	2,052	164,919
Quebec.	1,287	140,339	1,301	141,406	1,344	143,340	1,338	166,133	1,384	172,975
Ontario.	1,886	176,430	1,942	178,848	1,978	180,340	2,011	184,328	2,028	192,970
P. E. Island.	161	12,200	158	11,924	149	10,761	145	9,815	154	10,387
B. Columbia.	666	77,105	712	79,954	782	77,746	872	83,792	939	87,056
Manitoba.	141	7,765	142	7,809	149	8,341	144	8,247	87	4,341
Yukon District. . .	12	2,172	11	1,763	11	1,763	13	2,670	16	2,984
Saskatchewan. . . . .	.....	.....	.....	.....	1	89	4	290	4	290
Total.	7,152	682,838	7,325	669,825	7,512	654,179	7,528	698,688	7,602	702,324

	1909.		1910.		1911.		1912.		1913.	
	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
New Brunswick. . .	937	62,984	951	59,637	966	55,872	1,001	57,369	1,031	60,020
Nova Scotia.	2,058	160,286	2,054	149,737	2,105	142,631	2,158	143,295	2,106	138,107
Quebec.	1,432	175,370	1,499	189,945	1,511	193,682	1,566	227,048	1,628	247,225
Ontario.	2,061	208,652	2,027	227,457	2,014	236,877	2,017	253,376	2,012	279,642
P. E. Island.	150	10,154	150	10,100	149	9,683	148	9,577	149	10,071
B. Columbia.	1,020	92,746	1,109	105,414	1,227	122,264	1,376	136,618	1,506	153,06
Manitoba.	90	5,087	94	5,565	96	6,373	95	6,096	93	5,545
Yukon District. . .	16	2,984	16	2,784	15	2,708	14	2,543	15	2,940
Saskatchewan. . . .	4	290	4	290	5	356	5	356	5	356
Total.	7,768	718,553	7,904	750,929	8,088	770,446	8,380	836,278	8,545	896,965

8 GEORGE V, A. 1918

COMPARATIVE STATEMENT showing the number of Vessels and number of Tons on the Registry Books of the Dominion of Canada, etc.—*Concluded.*

Provinces.	1914.		1915		1916.	
	$\frac{\text{No.}}{\text{Vessels}}$	Tons.	$\frac{\text{No.}}{\text{Vessels}}$	Tons.	$\frac{\text{No.}}{\text{Vessels}}$	Tons.
New Brunswick	1,052	55,522	1,068	56,219	1,074	50,147
New Scotia	2,098	135,053	2,087	125,567	2,064	123,052
Quebec.....	1,663	259,143	1,590	267,897	1,452	273,769
Ontario	2,100	314,660	2,111	312,971	2,117	327,676
Prince Edward Island	149	10,029	158	11,518	155	10,652
British Columbia	1,591	147,192	1,643	144,835	1,687	145,525
Manitoba.....	103	7,999	84	7,480	95	8,953
Yukon District	11	2,295	11	2,295	11	2,295
Saskatchewan	5	529	5	530	5	529
Total.....	8,772	932,422	8,757	929,312	8,660	912,598

LIST OF PORTS at which Vessels may be registered, showing the number of New Vessels Built and Registered in the Dominion of Canada, during the Year ended December 31, 1916.

PROVINCE OF NEW BRUNSWICK.			PROVINCE OF ONTARIO.		
Name of Port.	Total Number of Sailing Ships and Steamers.	Total Net Tonnage of Sailing Ships and Steamers.	Name of Port.	Total Number of Sailing Ships and Steamers.	Total Net Tonnage of Sailing Ships and Steamers.
Chatham	15	258	Amherstburg		
Dartmouth			Belleville		
Moncton			Bowmanville		
Richmond	1	43	Brockville		
Sackville			Chatham		
St. Andrews	1	12	Cobourg	1	31
St. John	2	19	Collingwood		
Total	22	332	Cornwall		
			Deseronto		
			Darbyville		
			Fort William		
			Goderich		
			Hamilton		
			Kemora	1	36
			Kingston	1	5
			Lindsay		
			Midland		
			Napanee		
			Oakville		
			Ottawa	6	81
			Owen Sound		
			Peterborough	1	83
			Pictou		
			Port Arthur	2	29
			Port Barwell		
			Port Dover	1	15
			Port Hope		
			Port Stanley		
			Prescott		
			Shelburne	3	1,640
			Southampton		
			Sault Ste. Marie.....	3	179
			St. Catharines	1	27
			Simcoe		
			Toronto	2	41
			Walden		
			Wellby		
			Windsor		
Total	65	7,091	Total.....	26	5,547

SESSIONAL PAPER No. 21

LIST OF PORTS at which Vessels may be registered, showing the number of New Vessels Built and Registered, etc.—*Concluded.*

PROVINCE OF QUEBEC.			YUKON DISTRICT		
Name of Port.	Total Number of Sailing Ships and Steamers.	Total Net Tonnage of Sailing Ships and Steamers.	Province.	Total Number of Sailing Ships and Steamers.	Total Net Tonnage of Sailing Ships and Steamers.
Amherst (Magdalen Islands).....			Dawson City.....	Nil.	Nil.
Gaspé.....			SASKATCHEWAN.		
Montreal.....	20	5,387	Prince Albert.....	Nil.	Nil.
Paspébiac.....	13	158	SUMMARY.		
Quebec.....	9	545	New Brunswick.....	22	132
Sorel.....	9	2,553	Nova Scotia.....	65	7,761
Total.....	51	8,643	Quebec.....	51	8,643
PROVINCE OF PRINCE EDWARD ISLAND.			Ontario.....	26	5,507
Charlottetown.....	Nil.	Nil.	Prince Edward Island..		
PROVINCE OF BRITISH COLUMBIA.			British Columbia.....	65	4,487
New Westminster.....	14	1,968	Manitoba.....	15	1,573
Prince Rupert.....	4	33	Yukon District.....		
Vancouver.....	39	1,944	Saskatchewan.....		
Victoria.....	8	542	Total.....	244	28,303
Total.....	65	4,487			
PROVINCE OF MANITOBA.					
Winnipeg.....	15	1,573			

8 GEORGE V, A. 1918

COMPARATIVE STATEMENT of New Vessels Built and Registered in the Dominion of Canada during the Year ended December 31, in each Year, from 1874 to 1916, both inclusive.

Provinces.	1874.		1875		1876.		1877.		1878.	
	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
New Brunswick.	90	42,027	65	33,483	61	31,040	54	31,158	56	27,368
Nova Scotia.	175	84,480	177	67,106	194	58,771	219	47,980	166	49,784
Quebec.	73	20,796	103	22,825	51	17,800	62	19,253	46	10,870
Ontario.	50	10,797	53	7,760	47	5,397	28	3,316	30	2,409
Prince Edward Island.	88	24,634	83	19,838	62	14,571	62	17,026	38	10,382
British Columbia.	5	276			1	121	2	204	2	00
Manitoba.							3	48	1	5
	481	183,010	481	151,012	416	127,700	430	118,985	339	100,873
All new vessels built in Canada which proceeded to the United Kingdom under a Governor's pass without being registered.	6	7,746			3	2,721	2	1,943	1	663
All new vessels which left Quebec for registration in Germany.					1	480				
Total.....	487	190,756	481	151,012	420	130,901	432	120,928	340	101,563

Provinces.	1879.		1880.		1881.		1882.		1883.	
	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
New Brunswick.....	43	19,067	63	18,896	57	18,259	65	16,820	72	21,103
Nova Scotia.	125	39,208	126	31,257	150	40,465	117	26,711	202	35,765
Quebec.	29	7,421	33	8,219	56	5,673	26	6,785	42	6,594
Ontario.	42	2,464	44	3,610	54	5,111	55	4,369	34	4,311
Prince Edward Island.	20	5,279	21	3,359	15	4,351	15	3,508	17	5,343
British Columbia.	5	788			2	85	8	1,631	5	849
Manitoba.			1	100	3	116	1	289	2	125
	265	74,227	288	65,441	337	74,060	288	60,113	374	74,090
All new vessels built in Canada which proceeded to the United Kingdom under a Governor's pass without being registered.							1	1,029		
All new vessels which left Quebec for registration in Germany.										
Total	265	74,227	288	65,441	337	74,060	289	61,142	374	74,090

SESSIONAL PAPER No. 21

COMPARATIVE STATEMENT of New Vessels Built and Registered in the Dominion of Canada during the Year ended December 31, etc.—*Continued.*

Provinces.	1884.		1885.		1886.		1887.		1888.	
	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
N. Brunswick...	46	12,888	34	7,736	34	4,931	18	2,909	32	2,530
Nova Scotia....	178	42,032	102	24,703	93	20,948	87	12,310	116	2,965
Quebec.....	32	3,815	29	4,556	27	2,683	28	2,888	23	2,669
Ontario.....	58	4,446	45	4,509	52	2,075	66	2,993	62	5,095
P. E. Island....	21	5,189	11	1,707	12	1,318	7	601	12	1,412
B. Columbia....	15	675	6	648	8	154	9	376	18	448
Manitoba.....	37	3,366	13	320	3	98	8	439	1	11
Total.....	387	72,411	240	44,179	229	32,207	223	22,516	264	25,130

Provinces.	1889.		1890.		1891.		1892.		1893.	
	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
N. Brunswick..	50	4,792	35	5,572	43	6,269	21	1,873	119	2,819
Nova Scotia....	126	19,645	150	33,907	130	35,528	105	16,446	111	15,089
Quebec.....	27	3,759	25	4,880	46	4,200	34	2,620	53	4,220
Ontario.....	45	3,259	41	4,917	44	2,662	34	3,684	49	4,126
P. E. Island....	12	1,503	12	2,008	5	1,000	9	967	3	634
B. Columbia....	12	840	15	876	41	2,364	46	2,887	19	944
Manitoba.....	8	548	7	218	3	122	6	296	8	608
Total.....	280	34,346	285	52,378	312	52,145	255	28,773	362	28,440

Provinces.	1894.		1895.		1896.		1897.		1898.	
	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
N. Brunswick...	40	2,534	27	714	24	627	33	1,738	31	790
Nova Scotia....	128	8,721	89	4,762	97	7,704	54	4,259	67	4,962
Quebec.....	55	4,412	49	4,335	36	3,969	49	4,227	51	4,139
Ontario.....	64	3,137	52	3,732	38	1,757	50	3,850	46	1,872
P. E. Island....	3	183	1	196	3	111	3	226	5	372
B. Columbia....	25	1,900	18	1,709	22	1,466	26	2,429	72	12,228
Manitoba.....	11	356	14	822	7	512	16	365	6	159
Total.....	326	21,243	250	16,270	227	16,146	231	17,094	278	24,522

8 GEORGE V, A. 1918

COMPARATIVE STATEMENT of New Vessels Built and Registered in the Dominion of Canada during the Year ended Dec. 31, etc.—*Continued.*

Provinces.	1899.		1900.		1901.		1902.	
	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
New Brunswick	31	798	22	762	25	1,141	23	1,055
Nova Scotia	92	7,594	117	9,416	133	14,660	140	14,827
Quebec	35	5,943	50	4,301	43	7,421	16	1,990
Ontario	52	3,419	58	3,734	62	2,665	60	8,791
Prince Edward Island	3	56	3	106	6	589	8	530
British Columbia	51	2,734	43	3,837	62	7,728	36	2,550
Manitoba	13	554	3	109	3	112	10	137
Yukon District			1	61	1	165	3	336
Saskatchewan								
Total	277	21,098	297	22,326	335	34,481	296	30,216

Provinces.	1903.		1904.		1905.		1906.	
	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
New Brunswick	21	1,708	25	1,306	25	998	23	431
Nova Scotia	135	12,907	99	5,993	160	7,453	154	7,538
Quebec	31	1,076	20	3,203	24	1,438	50	3,940
Ontario	71	10,719	105	5,167	85	5,735	74	6,014
Prince Edward Island	6	171	2	185	6	577	4	147
British Columbia	56	3,494	48	2,362	51	3,536	82	2,774
Manitoba	5	248	9	338	1	44	9	808
Yukon District							1	89
Saskatchewan								
Total	328	30,323	308	18,554	352	19,781	397	21,741

Provinces.	1907.		1908.		1909.		1910.	
	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
New Brunswick	27	911	32	1,288	14	666	17	397
Nova Scotia	109	5,165	80	6,600	75	6,007	82	5,572
Quebec	50	10,326	62	7,279	65	5,825	58	7,012
Ontario	91	14,441	46	8,645	73	7,973	46	3,612
Prince Edward Island	7	215	5	254	1	5	2	23
British Columbia	97	7,115	76	4,778	93	4,068	84	5,177
Manitoba	5	81	1	2	5	692	5	490
Yukon District			2	5				
Saskatchewan		201						
Total	392	38,401	294	28,963	327	25,106	294	22,283

SESSIONAL PAPER No. 21

COMPARATIVE STATEMENT of New Vessels Built and Registered in the Dominion of Canada during the Year ended December 31, etc.—*Concluded.*

Provinces.	1911.		1912.		1913.		1914.	
	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
New Brunswick	25	774	44	1,092	45	1,114	31	1,319
Nova Scotia	136	5,340	126	5,853	67	4,899	56	3,303
Quebec	30	2,721	49	5,744	62	8,667	51	6,753
Ontario	42	10,086	74	11,170	38	15,572	78	23,567
P. E. Island	4	61	1	34	3	804	2	35
B. Columbia	98	7,781	128	10,647	128	9,000	97	5,867
Manitoba	3	902	1	546	1	18	11	2,899
Yukon District							1	3
Saskatchewan	1	66						
Total	339	27,536	420	34,886	344	40,164	627	43,346

Provinces.	1915.		1916.	
	Vessels.	Tons.	Vessels.	Tons.
New Brunswick	22	1,114	22	332
Nova Scotia	51	2,982	65	7,661
Quebec	49	7,790	51	8,643
Ontario	38	4,704	26	5,597
P. E. Island	2	24		
British Columbia	79	2,057	65	4,487
Manitoba	5	146	15	1,573
Yukon District				
Saskatchewan				
Total	246	18,832	244	28,303

STATEMENT showing the number of Vessels Removed from Registry in the Dominion of Canada during the year ended December 31, 1916, and the cause for such removal.

Sold to foreigners—(U.S.A.) 22, French Government, 1, Russian Government, 1	24
Wrecked	26
Stranded	20
Lost	7
Broken up, reported out of existence, condemned, dismantled, abandoned, etc.	260
Abandoned at sea	7
Collision	2
Foundered	14
Burnt	18
Transferred to St. John's, Nfld.	25
" Barbados	17
" G. B.	5
" New Zealand	
" Australia	1
Missing	
Registry no longer required	2
Sunk by mine 3, by torpedo 1	4
Total	432

It is estimated that 42,566 men and boys, etc., inclusive of masters, were employed on ships registered in Canada during the year 1916.

LIGHTKEEPERS appointed during year 1916-17.

Name of Station.	Keeper.	SALARY.	
		Minimum.	Maximum.
		\$	\$ cts.
Great Salmon River, N. B.	W. Sealey	80	100 00
Digby Pier, N. S.	W. M. Wright.....	260	320 00
Cape Madeline Village, P. Q. Back	G. de Lottinville	120	140 00
Minamizash, P. L. I.	R. Mokler	100	120 00
Pont Peter, P. Q.	G. Cotton	520	600 00
Southampton, Ont. Back	J. Buckley	220	260 00
Hope Island, Ont.	W. Downer		555 00
Barrs Cove, N. S.	D. Webber.	320	380 00
Quins Point, N. S.	Mrs. H. McLean	220	260 00
Ile a L'Aigle, P.Q. (Back).....	A. Langlois	140	180 00
Parrsboro, N. S.	J. W. McNamara	440	520 00
Little Hope, N. S.	R. Burgess	880	980 00
St. Paul Island, N. S.	F. R. Huntley	600	680 00
Leonsberg, Fog alarm engr., N. S.	D. Covey		1,043 15
Carapuet, N. B.	J. L. Foulon	60	80 00
Pictou Bar Light, N. S.	W. E. Watts.....	520	600 00
Livingston Channel, Ont.	W. H. Kelly.....	320	380 00
Jones Island, Ont.	J. G. Dixon	320	380 00
Port Maitland, Ont.	F. Splatt	780	880 00
Little River, N. S.	Mrs. M. Frask	60	80 00
McIntyre Point, N. B.	B. Dobson	100	120 00
S. W. Wolfe Island Light, N. B.	H. Wright.....	600	680 00
Cape Peter, P. Q.	J. Dornan	100	120 00
Bar Harbor Range, N. B.	W. Stevers	260	320 00
Wedge Island, N. S.	N. A. Pride	600	680 00
Pondicherry, P. Q.	John Quinlan	140	180 00
Great Salmon, P. Q.	D. J. Boncharl	880	980 00
McKays Island, Ont.	J. A. C. McNeish.....	320	380 00
Negro Island, N. S.	L. Perry	440	520 00
Chambly Basin, P.Q.....	D. Laminasse	180	220 00
Sable Island, N. S. (West)	H. S. Glazebrook		200 00
Marble Point, N. B.	J. L. Doyette	140	180 00
Chambly, Ontario, P. Q.	P. Champagne	180	220 00
Pont St. P. Q.	Mrs. N. Parach	320	380 00
Orleans Point, N. B.	A. T. Stanges	120	140 00
Humbert River, B. C.	E. Biddle.....	1,020	1,170 00
Long Point Range, Ont.	H. Taylor	220	resigned
Long Point Range, Ont.	J. B. Knapp	880	980 00
Georgian Point, P. Q.	Wm. Bradley	180	220 00
Red Point Island Fog Alarm, N. B.	C. Stanley	780	880 00
Cape Sable Island, N. S.	A. Ware	980	1,180 00
Little Harbour, N. S.	F. Thibe	140	180 00
Needles, B.C.....	G. F. Spence	\$19 per month.	
Pembroke Harbour, Ont.	Frank N. Bell	600	680 00
Pembroke Harbour, N. S.	Angus L. Aches	380	440 00
Pembroke Island Light and Range, B. C.	R. O'Brien	540	600 00
Georgian Point, Ont.	John K. Cooper	600	680 00
Pondicherry, P. Q.	E. Murray.....	220	260 00
Riviere a la Pipe Range, P.Q.....	J. D. Tremblay.....	120	140 00

SESSIONAL PAPER No. 21

HARBOUR MASTERS appointed during year 1916-17.

Harbour.	Harbour Master.	Salary.
Ocean Falls, B. C. (New)	S. D. Raymond	\$200 of collections.
Cape Negro, N. S.	Jas. Smith	\$200 "
Glasgow & Cape Breton Pier, N.S.	D. J. McKinnon	\$300 "
Port Lorne, N. S.	T. Templeman	\$200 "
Pender, B. C. (New)	G. S. Cook	\$200 "
Walton, N. S.	C. M. Parker	\$200 "
Liverpool, N. S.	W. A. Smith	\$200 "
Dalhousie, N. B.	J. Wallace	\$200 "
Northport, N. S.	R. Brander	\$100 "
Tracadie, N. B.	F. Dripdale	\$100 "

EXPENDITURE AND REVENUE.

The parliamentary appropriation for the fiscal year 1916-17 was \$6,618,998; the total expenditure, \$4,768,784.12; leaving an unexpended balance of 1,850,213.88. The net revenue was \$574,497.71.

CORRESPONDENCE.

The total number of letters received during the fiscal year 1916-17 was 48,791, as against 50,694 in 1915-16; and 34,865 letters were sent, as against 39,792 in 1915-16.

SEASON OF NAVIGATION.

At the port of Montreal the harbour was free of ice on April 20, five days later than last season, the water being exceptionally high. The first arrivals from lower-river ports were the *Gaspesian* and *Lady Grey*, on April 24. The first vessel to arrive from sea was the *Bayern*, Capt. C. Dominico, on May 1.

Two weeks of fine, mild, clear weather marked the close of the season. The last vessel to depart for sea was the *Ranney*, on December 11.

STEAMBOAT INSPECTION.

The report of the Chairman of the Board of Steamboat Inspection is published as a supplement to the annual report.

A. JOHNSTON,

Deputy Minister of Marine and Fisheries.

APPENDIX No. 1.

ANNUAL REPORT OF THE CHIEF ENGINEER OF THE DEPARTMENT OF MARINE.

The Deputy Minister of Marine and Fisheries,
Ottawa.

SIR,—I have the honour to submit the following report of the work done in the several services under the supervision of this office during the twelve months ended March 31, 1917.

The following changes in the office staff occurred during the fiscal year:—On July 31, 1916, Miss Mary T. Edwards resigned from the service; on February 1, 1917, Mr. G. W. York resigned from the service, but was temporarily re-employed on March 1; on March 1, 1917, Miss M. L. Gay was temporarily transferred to another branch of the department.

The department has been advised that Mr. F. C. Calderon, a draughtsman employed in this branch, and one of the first to respond to Canada's call for volunteers, was killed in action near Ypres, April 14, 1916. His loss is mourned by the whole staff.

OFFICE WORK.

In consequence of the war, the quantity of work done by the branch has been greatly curtailed, as may be seen by the subjoined tabular statement of work done in the draughting office during the fiscal year.

Description of Work	Plans Designed	Plans Revised	Copies Made	Difference from Previous Year
Plans for new vessels	25	19	284	100
Plans for repairs	8	1	2	+ 2
Details	34	2	522	00
Working drawings	5	53	15	- 20
Drawings of	15	6	16	- 60
Machinery	26	24	664	+ 19
Lanterns and illuminating apparatus	7	196	8	- 27
Electrical apparatus	13	8	94	- 119
Engines	4	9	12	- 12
Ships		2		1
Plans for new vessels	34	16	191	- 352
Plans for repairs	7	118	49	- 35
Miscellaneous	15	15	94	- 11
	221	792	1,648	900

Plans for new vessels (April 1 to March 31, 1917)	60	147
Plans for repairs	28	227
Charts received and entered in chart books	49	3
Specifications and bills of material written	18	270
Notices to Mariners issued (comprising 382 subjects)	124	11

SESSIONAL PAPER No. 21

In addition to the work of this branch done under the above vote, the staff has been called upon to perform work of varied description for other branches of the department, and which may be summed up as follows:—

For the Meteorological Service Branch.—Erection of storm signal masts at the following places:—

Storm signal mast at Toronto moved to a new location, and erection of a fence on the Meteorological property at Toronto.

For the Naval Department.—Erection of a radiotelegraph testing station at Ottawa.

PUBLICATIONS.

The work of preparing and issuing notices to mariners continues to be heavy and urgent. During the past twelve months, 124 notices, covering 382 subjects, have been published.

A large number related to regulations necessitated by the continuance of the war, and other considerable items were descriptions of channels dredged by the Department of Public Works and aids to navigation to mark the same; descriptions of uncharted dangers; new buoys and beacons established; and hydrographic notes resulting from surveys and inspections.

During the past twelve months notices relating to waters outside of Canada were issued, covering eight items relating to Newfoundland, two items relating to St. Pierre-Miquelon, five items relating to the Atlantic, twenty-one to the inland, and fourteen to the Pacific waters of the United States, seven items relating to the Panama canal, as well as fifteen notices relating to the transatlantic, and three notices relating to transpacific subjects.

A new edition of the "List of Buoys, Beacons and Day Marks" on the Pacific coast of the Dominion of Canada was prepared and published, thoroughly revised and corrected by the undersigned personally, to April 15, 1916.

The annual edition of the "List of Lights and Fog Signals" was prepared and published in three separate volumes, one for the Atlantic coast and the river St. Lawrence, to the head of ocean navigation, one for the inland waters of Canada, and the third for the Pacific coast.

PERSONAL INSPECTION.

As is becoming more generally the practice, the Chief Engineer and the Assistant Chief Engineer made frequent trips of inspection, during the past fiscal year, especially in connection with works of construction. The most important of these were as follows:—

The Chief Engineer, in company with Mr. W. H. Carson, on the C.G.S. *Lambton*, spent the month of June, 1916, in an inspection of all aids to navigation on the inland waters between Prescott and the head of lake Superior. An estimate of the quantity of work involved may be gathered from the fact that 112 reports of inspection and other reports requiring departmental attention were submitted for consideration.

Between July 28 and August 12, the Chief Engineer accompanied the Deputy Minister of Marine on an inspection of the Maritime Province coast, from St. John, N.B., through the Gut of Canso to Bathurst, N.B. They were joined by the executive heads of the several agencies that were inspected, and as a result of the trip, several important improvements in illuminating apparatus were decided upon, and have been since undertaken or made.

Between September 7 and 12, an inspection of the St. Lawrence, between Montreal and Quebec, was made by the Chief Engineer. In connection with this trip he was a witness of the disaster to the Quebec bridge.

8 GEORGE V, A. 1918

Between September 20 and 26 the Chief Engineer accompanied the Deputy Minister on an inspection of lights on the lower St. Lawrence and the Saguenay river, as far east as Pointe des Monts, and north to Chicoutimi.

In October the Chief Engineer and the Commissioner of Lights made a joint inspection of aids to navigation in lake Timiskaming, with a view to systematic improvement.

In December the Chief Engineer inspected ice conditions at Midland; in January he attended the annual meeting of the Lake Carriers' Association at Detroit, and from February 17 to March 16, he was working on the Pacific coast, mainly in connection with the interests of the Vancouver Harbour Commission.

The Assistant Chief Engineer spent most of the month of April, 1916, at Sault Ste. Marie, attending to icebreaking operations, necessitated by the urgent demand for early forwarding of freight, especially grain.

Between September 28 and the end of the fiscal year he made several trips to St. John, N.B., to oversee the dredging of an additional berth at the departmental depot at that place. This work has been done under his personal supervision.

LIGHTING OF HUDSON BAY ROUTE.

In view of the limited traffic in the bay and the very heavy demands on the time of departmental steamers, the unwatched lights in Hudson bay and strait were not operated during the past year, with the exception of the one at cape Tatnam. This was recharged in the usual way and remained in operation during the season. The wooden beacon on Nelson shoal was reported destroyed, presumably by the ice. It has not been re-established as yet. The steel skeleton unlighted beacon for Marsh point was erected during the season by the Hudson's Bay Company. The total expenditure in connection with this work during the past year was \$3,049.87.

DEPARTMENTAL DEPOTS.

Victoria, B.C.

The new depot at Victoria, B.C., has been provided with the necessary stores, sheds, workshops, derricks, etc., and is now in full operation. The estimated cost of the work was \$25,000, and the work was done practically all by contract, at a cost of \$22,870.

St. John, N.B.

The new depot at St. John has been in continual use during the past year. Owing to congestion in the harbour, it was decided to increase the accommodation for boats by excavating a berth at one side of the new wharf. This was estimated to cost about \$8,500. The work is well advanced, and a very good berth will be obtained. The excavation had to be done in solid rock and may probably cost a little more than the estimate, chiefly owing to the difficulty of working the plant to advantage in the restricted space, delays caused by ice accumulating on the site, and the necessity of permitting the Government steamers to carry out their work at the wharf without interruption.

Dartmouth, N.S.

At Dartmouth, various improvements were carried out. The old wharf was repaired, and the berth in front dredged out. The heating arrangements were improved, fencing erected, and a new storehouse and coal shed built. The estimated cost was \$5,250, and the work is now practically completed within the estimate.

SESSIONAL PAPER No. 21

Prescott, Ontario.

The operations at the Prescott depot have been further curtailed during the past fiscal year, owing to the practical standstill of new works. Sales for the year amounted to slightly under \$100,000, as compared with \$130,000 in the previous year. Operating expenses were about \$46,000, as compared with \$56,000 for the year before. The earnings were about \$22,000, as compared with \$30,000 for the year before.

The work of improving and standardizing the larger size vapour burners was continued, and very good results reached. Great difficulty was experienced during the year in obtaining suitable mantles for the standard vapour burners. Owing to the war the supply of material used in the manufacture of these mantles has been practically cut off. It was almost impossible to obtain any quotations, and the problem became serious. The co-operation of the different agencies and of the individual lightkeepers was enlisted, and means were found to utilize the mantles originally intended for other types of burners, and of which a certain quantity was in stock. The standard stock was carefully conserved and redistributed. Some mantles were obtained from England, and as the situation has now improved it is not expected that there will be any breakdown in the service.

Standard diaphones of the various sizes in use in the service are now being machined, assembled and tested at Prescott with good results, and at a reduced cost.

REMOVAL OF OBSTRUCTIONS.

During the past twelve months the following work has been done under the annual appropriation for the removal of wrecks and obstructions to navigation:—

Barrington Passage, N.S.—Steamship <i>Empress</i> , wrecked in Barrington passage, was removed under contract by Messrs. Hugh Cann & Son, Ltd., Yarmouth, N.S.	750 00
Buctouche, N.B.—Wreck of schooner <i>Laura Cox</i> was removed by departmental diver.. . . .	124 65
Bear Creek, N.S.—Wreck of schooner <i>Luta Price</i> was removed, under contract, by J. Orr, Apple river, N.S.. . . .	50 00
Irish ledge, N.B.—A three-masted schooner sank on Irish ledge, N.B. The masts, which were a menace to navigation were removed by C.G.S. <i>Dollard</i>.. . . .	.....
Ingonish harbour, N.S.—Wreck of schooner <i>Original</i> was removed under contract by the Southern Salvage Company at owners' expense.	
Rimouski, P.Q.—The dredge <i>Algonquin</i> , an obstruction to navigation, was moved by the purchasers, viz.: La Compagnie Générale d'Entreprises Publiques. No cost.	
Cardigan, P.E.I.—Wreck of schooner <i>Baltic</i> was removed by departmental diver..	226 59
Victoria, P.E.I.—Wreck of schooner <i>Therese</i> was removed by departmental diver.	180 61
Thames river, Ont.—Wreck of steamer <i>Frontier</i> was removed, under contract, by the Reid Wrecking Company of Sarnia. No cost to the department.	
Spragge, Ont.—The burnt wreck of the <i>Harold</i> was broken up by M. J. Egan, Supervisor of Construction.. . . .	15 10
Collingwood, Ont.—The steamer <i>City of Midland</i> , was removed by the owners, viz.: Canada Steamship Lines, Ltd.	
Collins Bay, Ont.—Wreck of <i>Norrisman</i> , removed by the Donnelly Wrecking Co.	
Detroit river, Ont.—Wreck of wooden steamer <i>Topeka</i> , removed by the owners, Lake Shore S. S. Co., Milwaukee, Wis.	
A number of small expenditures, such as buoying, wrecks, advertising and incidental expenses were incurred.. . . .	531 56
Total amount expended this year under this vote.. . . .	\$1,878 51

MAINTENANCE AND REPAIRS TO WHARVES.

Wharves owned by the Government are usually built by the Department of Public Works of Canada, and on completion come under this department for maintenance (see R.S.C. cap. 112 and amending Acts). We have had formally transferred to our control 421 public wharves, but there are probably twice that number, of the completion of which we have not been officially notified, and where wharfingers have not yet been appointed.

8 GEORGE V, A. 1918

This branch attends to minor repairs. Large repairs are undertaken by the Department of Public Works. During the past year, \$6,306.97 has been expended in repairs to wharves. The following is a list, by provinces, of the amount expended:—

Nova Scotia..	\$ 218 21
New Brunswick...	1,162 75
Prince Edward Island.. . . .	95 08
General account.. . . .	162 97
Montreal District.. . . .	1,312 85
Ontario..	1,506 84
Quebec..	1,848 27
British Columbia.. . . .	Nil.

ICE BREAKING.

- 1. A three-year contract with the Canadian Towing and Wrecking Company, Limited, of Port Arthur, to keep the harbours at the head of lake Superior open for navigation until December 17 in each year, and to open them in the spring, as soon as the canal at Sault Ste. Marie is open for navigation, is still in force, and under this contract the harbours of Port Arthur, Fort William, and West Fort William were opened in the spring of 1916 in good time.
- 2. The usual contribution of \$300 was made towards keeping open the St. Croix river in the vicinity of St. Stephen. The annual cost of this work is in the neighbourhood of \$1,000, and the department of late years has contributed \$300 a year towards this, the remainder being made up locally.

Respectfully submitted,

WM. P. ANDERSON, M. INST., C.E.,
Chief Engineer.

CHIEF ENGINEER'S OFFICE,
DEPARTMENT OF MARINE,
OTTAWA, April 1, 1917.

SESSIONAL PAPER No. 21

INCLOSURE "A."—Detailed report of the Chief Engineer of the Department of Marine on construction, establishment and improvement of lighthouses and other aids to navigation, up to March 31, 1917.

To the Deputy Minister,
Department of Marine,
Ottawa.

SIR,—I have the honour to submit a detailed report on work done in the construction and establishment of aids to navigation, for the twelve months ending March 31, 1917.

This statement is put in tabular form, and includes every item of expenditure incurred during the year against the vote of seven hundred and fifty thousand dollars for construction, etc., but no work done chargeable to other votes.

NOVA SCOTIA.
NEW AIDS TO NAVIGATION.

Lightstation.	Nature of the work.	How performed.	Contractor or foreman.	Expenditure during fiscal year.
				\$ cts.
Sanford.....	Erection of a pole light	Day labour...	A. B. Little	116 97
Spry bay....	Erection of range lights front, enclosed wooden tower, showing a catoptric light, back, a steel skeleton tower, showing a locomotive headlight lantern. Provision and installation of apparatus. Inspection and incidental expenses. Construction of shelter shed..... Acquisition of site, etc.....	Contract	Standard Construction Co., Ltd., Halifax, contract price. Apparatus supplied from the Dominion Lighthouse depot, Prescott.	1,155 00 990 21 246 95 164 80

CHANGES AND IMPROVEMENTS IN EXISTING AIDS.

Arisaig....	Expropriation of site.....			40 00
Barrington light-ship.	Repairs.....	Day labour...	D. K. O'Brien.....	520 00
Battery point....	Repairs to lighthouse tower and erection of an oil shed. Provision of lantern.....	"	J. Morash..... Dominion Lighthouse Depot.	604 95 645 04
Bunker island...	Wall of living room sheathed, roof re-shingled, new canvas on lantern, changes in lantern and construction of cistern and general repairs.	Day labour .		676 67
Cape Freels	Repairs to dam (not yet completed).	"		30 00
Cape Roseway..	Conversion of old fog alarm building into a storehouse.	"	G. McKenna	137 17
Cape Sable.....	Replacement of steam fog alarm plant by an oil plant. Cost of machinery.....	"	E. J. Geizer, Erection... Dominion Lighthouse Depot.	845 35 3,323 02
Caribou.....	Erection of a combined lighthouse and dwelling, completion of work.	Contract.....	W. Talbot, Pictou, N.S.	2,174 36
Church point....	Repairs to foundation of lighthouse tower. Apparatus improved by the installation of a 4th order dioptric lens and duplex burner.	Day labour.....	D. B. Thibodeau..... T. H. Phillips.....	239 38 550 45

NOVA SCOTIA *Continued*

Lightstation.	Nature of the work.	How performed.	Contractor or foreman.	Expenditure during fiscal year.
				\$ cts.
Country harbour	Installation of a double flash reflector, 55 mm. burner and a Chanteloup clock. Cost of apparatus.....		J. L. Colter..... Dominion Lighthouse Depot, Prescott.	101 98 1,101 90
Dartmouth	Improvements to property begun last year. Buildings covered with asbestos for fire protection.	Day labour.		4,677 87 2,038 95
Darby Gut	Cutting trees on right of way and erection of gate. Provision of bell, e'c.....	Day labour.	Lightkeeper.	16 50 1,016 84
Guysboro har- bour.	Repairs to beacon at mouth of harbour.	Day labour.	E. J. Geizer.	469 16
Harbour island..	Repairs to protection work.....	"	E. J. Geizer.	256 18
Lac Umb	Provision of new apparatus.....			503 34
Little Dyke	Purchase of site, etc.....			71 60
Little Hope.....	Repairs to dwelling.....	Day labour	E. J. Geizer....	315 26
Lockport	Improvement of illuminating apparatus by the installation of a 360°, 4th order dioptic lens and 25 mm. burner. Co t of apparatus.....	"	T. H. Phillips. Dominion Lighthouse Depot, Prescott.	36 04 784 26
Louisburg...	Provision and installation of modern oil plant. Machinery.....	Day labour.	T. H. Phillips.....	604 60 3,867 44
Masstown...	Purchase of site, et		Dom. Lighthouse Depot Prescott.	46 60
Minasville..	Removal of pole light to new site	Contract	L. McCulloch,	40 00
Porter point	Removal of lighthouse to new site. Purchase of land, etc.....	"	S. de Adden, Kentville, N.S.	75 00 22 00
Sable island	Erection of steel skeleton tower and installation of new illuminating apparatus. Will be completed 1917-18.			60 11
Sadegus	Outstanding accounts in connection with installation of fog alarm, etc.			64 17
Sedart	Cost of apparatus already installed. Incidental expenses of foremen, etc.			4,862 56 109 36
Sheet harbour...	Purchase of site.....			45 00
St. Paul Island	Repairs to suspension bridge, at N. station. Erection of wooden double dwelling for superintendent at main station, begun last year. Erection of lighthouse and dwelling at S. station. Begun last year. Provision of apparatus.....	Day labour.	P. C. Johnson	83 98 492 44 3,552 34
Whitehead Isl..	Construction of concrete break-water. Will be completed 1917-18	Day labour.	E. J. Geizer.	3,196 11 1,445 00
Yarmouth	Erection of 6 dolphins.....	"	Harbour Master	180 00
Marathon	Materials, etc., in connection with the establishment of buoys, etc. Travelling expenses of officials, telegrams, salaries of foremen, etc.			3,851 70 2,768 15
	Total expenditure for Nova Scotia			47,010 59

SESSIONAL PAPER No. 21

NEW BRUNSWICK.

NEW AIDS TO NAVIGATION.

Lightstation.	Nature of the work.	How performed.	Contractor or foreman.	Expenditure during fiscal year.
				\$ cts.
Cape Tormentine	Erection of two wooden range light towers, showing catoptric light.	Day labour....	G. N. Breen.....	991 71
Marcelle point...	Erection of wooden lighthouse, tower, begun last year.	Contract.....	F. T. B. Young.....	100 00
	Provision and installation of a 7th order dioptric lantern.	..	Contract price \$450. Dominion Lighthouse Depot.	291 10
	Inspection and incidental expenses.	..	..	196 08
	Purchase and survey of land.....	..	..	139 20

CHANGES AND IMPROVEMENTS IN EXISTING AIDS.

Cape Spencer...	Completion of the erection of fog alarm building and oil shed started last year.	Day labour...	G. N. Breen...	296 82
	Provision of fog alarm machinery	..	Dominion Lighthouse Depot, Prescott.	1,918 15
Cape Tormentine	Front range mast replaced by a steel skeleton tower.	Day labour...	G. N. Breen.....	432 66
Carron point.....	Installation of reflector.....	..	Dominion Lighthouse Depot.	73 78
Dipper harbour..	Provision of hoisting gear.	..	..	36 41
Dixon point.....	Removal of range lights to mark changed centre line of dredged channel.	..	G. N. Breen..	144 24
Dog rock.....	Erection of spindle.....	..	G. N. Breen.....	198 98
Drews head.....	Installation of apparatus.....	..	Dominion Lighthouse Depot.	51 44
Gannet rock.....	Repairs to concrete under tramway and under high water landing.	Day labour....	G. N. Breen.....	232 34
Grandon flats..	Outstanding accounts for labour, etc.	..	..	137 50
Grindstone island	Replacement of steam fog alarm plant by a modern oil plant. Will be completed in 1917-18.	..	..	259 83
	Provision of engines.....	..	Dominion Lighthouse Depot.	1,589 60
Indian point.....	Range lights moved to axis of new channel.	..	..	576 27
	Land registration fee.....	..	..	1 50
Letete.....	Provision of lens.....	..	Dominion Lighthouse Depot.	53 00
Little Belledune.	Construction of groynes.....	..	..	21 50
Lower Fox island	Purchase of site, etc.....	..	..	23 00
Machias Seal Isd.	Construction of concrete pillars under tramway.	Day labour...	..	1,075 20
Marine depot... St. John.	Construction of buildings, excavation of berth, etc., etc. See special report.	..	..	8,452 10
	Services of dredge.....	..	Mar. Dredging & Cons. Co.	4,128 46
Navy island bar.	Provision of Gamewell fog bell mechanism.	..	..	780 90
Partridge Isd....	Changing gas supply on bell boat from automatic to accumulative system.	Day labour...	D. J. Gallagher.....	275 85
	Provision of lantern.....	..	Dominion Lighthouse Depot.	1,598 66
	Repairs to fog alarm boiler.....	..	..	431 00
Pea point.....	Provision and installation of a 25 mm. Diamond burner.	Day labour ..	D. J. Gallagher.	121 44

NEW BRUNSWICK *(Continued)*

Lightstation.	Nature of the work.	How performed.	Contractor or foreman.	Expenditure during fiscal year.
				\$ cts.
Perry point	Bracing of pole light	"	Lightkeeper	6 00
Point Lepreau	Repairs to fog alarm machinery and installation of engine.	Day labour	F. J. Lewis.	162 32
Point Prangle...	Construction of superstructure for bell buoy.	Contract	Union Fay and Machine Works.	175 00
Rickiban to	Purchase of shelter shed			75 00
	Fairway buoy mechanism changed from ball racers to clappers.	Contract	Union Foundry & Machine Works.	60 10
Spruce point....	Erection of concrete boundary posts.	"	E. B. Hanson.....	25 00
St. John West....	Construction of passenger gangway.	Day labour	G. N. Breen	771 72
	Repairs to crack in fire wall, provision of hose reel, etc.			84 69
	Repairs to track at No. 7 shed			295 16
	Placing of red light on berth No. 16, etc.			46 25
	Provision of apparatus		Supplied from Dominion Lighthouse Depot, Prescott.	361 70
	Painting and scraping waterpipes under Nos. 6 and 7 sheds.			74 66
	Fitting up new smoke stack			25 00
Stonehaven	Illuminating apparatus improved by the installation of a 4th order lens.	Day labour	Lightkeeper	9 00
	Provision of apparatus.....		Supplied from Dominion Lighthouse Depot, Prescott.	428 71
St. Louis Gully..	Purchase of site			82 74
Miscellaneous ex-	Materials in connection with the establishment of buoys, etc.			100 00
penses.	Travelling expenses of officials, telegrams, salaries of foremen, etc.			3,424 55
	Total expenditure for New Brunswick.			28,458 19

PRINCE EDWARD ISLAND
New Aids to Navigation.

Park Beach	Purchase of sites..		225 00
	Survey of land and reconstruction of light		17 25
	Provision of apparatus	Dominion Lighthouse Depot, Prescott.	179 68
	Cost of erection of tower will appear in next year's report.		

CHARGES AND IMPROVEMENTS IN EXISTING AIDS

Acadia	Front light moved to new site...	Contract	J. M. Morrow	70 00
	Filing plans of site, etc..			24 00
Brighton beach.	Repairs to beach water etc.	Day labour...	G. L. Gardin	19 96
Cape Henry	Freight on apparatus			19 11
Charlottetown wharf.	Fitting drain pipe			6 00
	Repairs to water pipe			10 00
Conception	Construction of movable range light	Day labour....	G. L. Gardin	36 68

SESSIONAL PAPER No. 21

PRINCE EDWARD ISLAND—*Concluded.*

Lightstation.	Nature of the work.	How performed.	Contractor or foreman.	Expenditure during fiscal year.
				\$ cts.
Darnley point...	Moving range lights to new sites.	Contract.....	C. Morrison.....	25 00
	Purchase of sites.....			50 00
East point.....	Preliminary expenses in connection with improvements to fog alarm.			25 75
Little channel....	Registering plan of site....			0 75
North point.....	Erection of fence.....	Day labour.....	D. P. McCarthy.....	5 00
Summerside.....	Registration fee in connection with purchase of site.			2 10
	Repairs to light.....			36 00
	Glazing.....			2 50
	Total expenditure for Prince Edward Island.			771 78

QUEBEC.

NEW AIDS TO NAVIGATION.

Anse à L'eau	Provision of a hand fog horn.....			18 58
Little Natashkwan.	" ".....			18 84
Thunder river...	" ".....			16 19

CHANGES AND IMPROVEMENTS IN EXISTING AIDS.

Bird rocks.....	Repairs to tramway.....	Day labour....	D. Bilodeau.....	181 94
Cape Anguille....	Preliminary expenses in connection with the erection of a derrick.			32 34
Cap au Corbeau.	Purchase of site, etc.....			385 00
Cape Bauld.....	Installation of a boiler for fog alarm plant.	Day labour....	E. Lavergne.....	1,550 39
Cape Rosier.....	Completion of the installation of oil engines.	"	E. Lavergne.....	900 83
Cape Salmon..	Work started last year.	"		
	Provision and installation of class "D" plant, and type "F" diaphone and alterations to buildings.	"	F. E. Cote.....	4,003 27
	Provision of plant and diaphone.		Supplied from Dom. Lighthouse Depot, Prescott.	2,172 76
Fame point.....	Repairs to dam.....	Day labour.	D. Bilodeau.....	395 61
Little Bonaventure.	Transporting light and shed to breakwater.	Contract.....	B. Arseneau.....	30 00
Macquereau Pt..	Purchase of site, etc.....			9 60
Magpie bay.....	Back light moved to new location, and the purchase and fencing of site.			70 14
Natashkwan point.	Installation of ball bearings for the illuminating apparatus.	Day labour....	Lightkeeper.....	24 87
Price Monument.	Purchase of site, etc.....			103 05
Quebec Agency..	Repairs to sidewalk, heating system, storehouse, electric wiring, etc.			689 92
Red islet....	Installation of a quadruple long focus reflector, Chanteloup clock and 35 mm. Diamond burner.	Day labour....	F. Parent.....	128 23
River St. John..	Increasing height of back range light.	Contract.....	L. Derosby.....	15 00

8 GEORGE V. A. 1918

QUEBEC—*Concluded.*

Light station.	Nature of the work.	How performed.	Contractor or foreman.	Expenditure during fiscal year.
				\$ cts.
Sandy beach...	Repairs to pier	"	L. Maloney	1,500 00
	Inspection, extras and incidental expenses.			202 00
Thunder river...	Provision of two Piper headlight lanterns.			12 00
Upper traverse..	Construction of shelter shed.....	Contract	H. Bezeau.....	25 00
White isl. light-ship.	Repairs to pier.....	Day labour.....	J. Blanchette.....	4,389 69
	Preliminary expenses in connection with installation of new boiler.			63 99
Miscellaneous expenses.	Materials in connection with buoys and beacons.			525 68
	Expenses incurred in the several workshops, including wages, material, power, etc., the salaries of erectors, travelling expenses of officials, telegrams and general upkeep of agency, etc.			39,923 95
	Total expenditure for Quebec			57,633 10

MONTREAL DISTRICT.

NEW AIDS TO NAVIGATION.

Cascades	Erection of wooden range light tower showing catoptric lights	Contract.....	P. Dore, Valleyfield, P. Q.	1,550 00
	Expenses in connection with the acquisition of site, inspection, etc.			162 95
Chute à Blon-deau.	Erection of 2 day beacons.....	Day labour	C. J. Hartley	152 91
He aux Sables...	Completion of work of the erection of three lighthouses.	"	J. D. Weir.....	3,102 73
	Work started last year.			

CHANGES AND IMPROVEMENTS IN EXISTING AIDS.

Barre à Bouvard.	Installation of a 22" reflector with Duplex lamp.	Day labour...	Crew of C.G.S. <i>Steam rock.</i>	45 00
Bathurst	Renewal of lead marks	"	Dept. Public Works	178 01
Berthierville	Erection of 5 day beacons.	"		36 98
Cap Charles...	Legal expenses in connection with the acquisition of site			105 70
Cap Madeleine	Erection of mast for the back light.	Day labour...	A. Martin	91 67
Daigneault.....	Provision of 2 traction headlight lanterns.			24 62
Daye	Construction of a shelter shed	Day labour	C. J. Hartley	150 04
He Carabon	Installation of two Ham traction headlights and erection of shelter shed	"	J. D. Weir..	102 23
He Roch	Repairs to lantern.	"	A. Martin	151 35
Lake St. Peter	Repairs to concrete piers..	"	A. Martin	159 27
Lavaltrie	Erection of range pole lights showing lights from Locomotive headlight lanterns.	"	A. Martin	159 93
Ponte au Chien	Fixed of site, etc.			120 50
Portneuf	Repair			38 17
Repentigny.....	Provision of apparatus			55 72

SESSIONAL PAPER No. 21

MONTREAL DISTRICT—*Concluded.*

Lightstation.	Nature of the work.	How performed.	Contractor or foreman.	Expenditure during fiscal year.
Sorel.	Repairs to pile driver.....	Day labour.....	Under direction of the superintendent of the shipyard.	\$ cts. 136 25
	Erection of fireproof storage shed for lanterns.	"		233 91
	Repairing test room and rearranging sheds A. B. and C.	"		542 73
St. Antoine, Church point.	Repairs to back light.....	"	J. D. Weir.....	17 15
St. Emmelie.....	Erection of day beacons and purchase of sites.			147 82
St. Placide.....	Provision and installation of reflectors.			91 46
St. Sulpice Course.	Legal expenses in connection with the acquisition of site.			412 80
Victoria pier, Montreal.	Erection of freight and telephone shed.			247 97
Witch shoal.....	Installation of a 5th order dioptric lens.	Day labour.....	Lightkeeper.....	110 27
Montreal Agency	Repairs and fittings to boats and scows used on construction work, pay and board of men including <i>Acetylene, Reserve, Lenore, Margot, Quebec</i> and <i>Sarah</i> ,		<i>Acetylene</i> 102 41 <i>Reserve</i> 10,922 32 <i>Lenore</i> 99 12 <i>Margot</i> 1,402 98 <i>Quebec</i> 181 77 <i>Sarah</i> 564 31 Scows and boats 1,610 58	14,883 49
Miscellaneous expenses.	Travelling expenses of officials, salaries of foremen, telegrams, etc.			6,926 33
	Materials in connection with the construction of buoys.			4,499 97
	Total expenditure for Montreal District.....			34,665 96

ONTARIO, PRESCOTT DISTRICT.

CHANGES AND IMPROVEMENTS IN EXISTING AIDS.

Bridge island....	Installation of a 7th order dioptric lens.		Dominion Lighthouse Depot.	190 10
Burnt island.....	Construction of a dwelling for lightkeeper to replace one destroyed by fire.	Day labour.....	J. J. Lindsay. . .	2,530 97
Cobourg	Moving fog alarm building to a new position.	"	H. V. Anderson.....	101 52
Cole shoal.....	Alteration and installation of a new lantern with increased height, etc.	"	J. J. Lindsay.....	226 63
Middle channel.	Erection of 3 beacons	"	J. J. Lindsay.	15 44
Main Duck Isd..	Construction of a breakwater....	"	J. J. Lindsay.....	1,280 32
Niagara-on-the-Lake.	Improvement of range lights at entrance to Niagara river by the installation of long focus reflectors.	"	S. Nieforth...	6 46
	Provision of reflectors.....		Dominion L. H. Depot.	712 29
Peter rock.....	Rebuilding of protection pier in concrete and erection of an iron railing on same.	"	M. J. Egan	2,063 39
Point Peter.....	Repairs to lightstation, struck by lightning.	"	M. J. Egan	430 41
Presqu'ile...	Repairs to breakwater.....	"	M. J. Egan.....	326 10
Toronto, East Gap.	Labour and material in connection with wiring to range lights in harbour.		Toronto Hydro Electric System.	131 69
Whitby.....	Repairs to lighthouse.....	Day labour.....	M. J. Egan.....	206 82
Wolfe island.....	Repairs to fence.....	"	Lightkeeper.....	49 45

8 GEORGE V, A. 1918

ONTARIO, PARRY SOUND DISTRICT.

NEW AIDS TO NAVIGATION.

Lightstation.	Nature of the work.	How performed.	Contractor or foreman.	Expenditure during fiscal year.
				\$ cts.
Grants Tomb...	Provision of hand fog horn and megaphone.			107 88
MacIntosh island	Provision of Piper lantern.....			16 32
Point Abino.....	Advertising for tenders for construction of new lighthouse and fog alarm station.			313 20
Port Arthur	Erection of unwatched acetylene pole beacon.	Day labour.	M. J. Egan	245 71
	Provision of apparatus, etc.....		Gas Accumulator Co. of Canada.	822 07
Port Maitland...	Installation of a Faraday fog bell and a class "B" diaphone plant	Day labour...	H. V. Anderson	1,866 73
Port Severn.....	Erection of four beacons and a buoy.	"	F. Smith.....	86 00
Teller wharf.....	Provision of Piper lantern.....			16 32
Winnipeg beach..	Erection of two beacons.....		Public Works Dept. ...	25 67

CHANGES AND IMPROVEMENTS IN EXISTING AIDS.

Battle island...	Painting tower with Toxement, etc.	Day labour...	Lightkeeper	227 49
Bay point, Sarnia	Repairs to shed foundation			25 00
Caribou island...	Material for repairs to boathouse			245 46
Colchester reef.	Repairs to steel casing around concrete pier.	Day labour	M. J. Egan	161 59
Fort William..	Erection of sign to warn navigators.			35 00
Goderich.....	Repairs to back range lighthouse tower.	Day labour...	M. J. Egan	142 30
Key island	Re-erection of Lash and Germain beacons.	"	Crew of C. G. S. "Lambton"	54 18
Little Current...	Erection of 2 day beacons.	"	M. J. Egan.....	23 79
Livermore channel.	Lighthouse painted by "Star White" paint, etc.	Contract	Dominion Paint Works, Walkerville, Ont. Contract price, \$151.	270 05
Livermore	Erection of concrete tower completed this year	"	C. Mattianni Contract price, \$8,490.	5,770 00
Lyal island....	Expenses in connection with improvement to apparatus.			37 29
Mississagi strait	Alterations to fog alarm plant and installation of a type "F" diaphone.	Day labour...	J. D. Young	894 55
Nottawasaga....	Purchase of site.....			35 22
Otter head.....	Construction of shelter shed....	Day labour....	M. J. Egan.....	339 39
Point Clark.	Preliminary expenses in connection with repairs.			187 02
Point Porphyry.	Construction of lighthouse			19 70
Prescott.....	Dominion lighthouse depot. See special report.			
Tobermory....	Erection of boathouse.....	Day labour...	Lightkeeper	68 13
M... expenses.	Materials, etc., in connection with the establishment of lighthouse depot.			1,612 35
	Travelling expenses of officers, and expenses of temporary help, erectors, etc., etc.			23,761 88
	Total expenditure for Ontario including the maintenance and operation of the Dominion Lighthouse Depot, Prescott.			80,867 54

SESSIONAL PAPER No. 21

BRITISH COLUMBIA.
NEW AIDS TO NAVIGATION.

Lightstation.	Nature of the work.	How performed.	Contractor or foreman.	Expenditure during fiscal year.
				\$ cts.
Darcy island....	Establishment of a mooring buoy	Day labour.....	Crew of C.G.S. <i>Newington</i> .	84 66
Kuakume.....	Erection of a day beacon.....	"	Crew of C.G.S. <i>Estevan</i>	66 73
Ogden point.....	Erection of an unwatched acetylene beacon.	Contract.....	Messrs. Parfitt Bros... Contract price, \$1,655.	1,531 00
	Provision of accumulator, etc.			1,087 85
Pirate point.....	Erection of an unwatched Aga beacon.	Day labour....	Crew of C.G.S. <i>Leebro</i>	1,144 44
Richards point.	Erection of an unwatched Aga beacon.	"	" "	1,444 59
Surf inlet.....	Erection of an unwatched acetylene beacon.	"	Crew of C.G.S. <i>Estevan</i> .	1,446 98
Tenas island.....	Erection of a day beacon.....	"	" "	66 13
Wearing point....	Erection of unwatched lighted beacon.	"	" "	2,128 06

CHANGES AND IMPROVEMENTS IN EXISTING AIDS.

Ballenas island..	Erection of a reinforced concrete tower and the installation of a triple flash long focus reflector and 35 mm. burner.	Day labour.....	W. H. P. Trowsdale....	5,520 21
Carmanah.....	Erection of a new dwelling.....	Contract.....	Warnock & Cockrane, Port Alberni, B.C.	2,212 00
	Incidental expenses.....			42 25
Comox bar.....	Erection of range light towers			480 68
	Outstanding accounts.			
Copper island...	Replacement of automatic beacon by an Aga beacon.	Day labour....	Crew of C.G.S. <i>Estevan</i> .	1,455 48
Danger rock.....	Replacement of automatic beacon by an Aga beacon.	"	" "	1,423 70
East narrows....	Construction of 3 concrete beacons	"	" "	30 74
Egg island	Erection of oil house, tool shed and hoist engine room and repairs to hoist.	"	Crew of C.G.S. <i>Leebro</i> .	284 00
Entrance island..	Installation of Chance lamp and outstanding accounts in connection with the installation of a diaphone.	"	Crew of C.G.S. <i>Newington</i> .	526 08
Estevan	Laying of a steel track from landing to lighthouse and radio-telegraph station.	"	R. H. Nicholson.....	5,809 01
Five Mile point..	Construction of dolphin light replacing one carried away by ice.	"	Public Works Dept....	129 50
Fraser river.....	Changing the Wigham light from Sechart to the Fraser river and installation of automatic beacon.	"	Crew of C.G.S. <i>Newington</i> .	690 00
	Repairs to dolphin.....	Contract...	Fraser River Pile Driving Co.	123 40
Garry point.	Installation of lanterns with reflectors.			260 83
Langara.....	Construction of an aerial tramway, etc.	Day labour	Crew of C.G.S. <i>Estevan</i>	563 81
Lardo	Erection of a pole light.....	"	Public Works Dept.....	44 00
Laurel point...	Removal of pole light to the extremity of the point.	"	W. H. P. Trowsdale...	87 50
Nootka.....	Provision of 4th order illuminating apparatus.			639 05
Pine island...	Provision of a set of ball bearings for Reliance clock, repairs to light station and renewing sidewalks.			194 24

BRITISH COLUMBIA—Concluded.

Light station.	Nature of the work.	How performed.	Contractor or foreman.	Expenditure during fiscal year.
				\$ cts.
Pointer rocks...	Replacement of automatic beacon by an Aga beacon.	Day labour.....	Crew of C.G.S. <i>Leebro</i>	1,514 48
Prince Rupert.	Repairs to Marine depot and painting buildings at sub-agency.	Day labour.....	G. Wynne	1,516 44
Race rocks	Changing diaphone installation to a larger type.			700 00
Ragged Isl	Erection of a day beacon			131 88
Sechart	Installation of an automatic beacon.	Day labour	Crew of C.G.S. <i>Estevan</i>	454 44
Second narrows..	Replacing beacon carried away by ice.	Contract	R. H. Woods	50 00
Sisters rock.....	Provision of a set of ball bearings for Reliance clock.	Day labour...	W. H. Peter	51 88
Turtle head.	Erection of a concrete beacon....	"	Crew of C.G.S. <i>Estevan</i>	102 34
Victoria Agency.	Erection of departmental buildings.	Contract	Messrs. Parfitt Bros., Victoria, B.C.	16,300 00
	Replacing settlement in filling, etc.	Day labour...	W. L. Stamford	6,570 56
Wingdam.	Installation of 2 Piper lens lanterns with reflectors.	"	Nicholson	239 91
Miscellaneous expenses	Materials, etc., in connection with the establishment of buoys, etc.			177 02
	Salaries of foremen, travelling expenses of local officers, telegrams, etc., also labour in connection with improvements to depot.			3,539 85
	Total expenditure in British Columbia.			62,709 66

HEADQUARTERS.

Miscellaneous expenses, including travelling expenses of officers, blueprint work, unforeseen expenses, photographic work, salaries of foremen, etc. \$19,048 31

RECAPITULATION BY PROVINCES.

Nova Scotia	47,010 59
New Brunswick	28,458 19
Prince Edward Island	771 78
Quebec district	57,633 10
Montreal district	34,665 96
Ontario and Northwest	80,893 21
British Columbia	62,709 66
Headquarters	19,048 31
Grant total expended	\$331,190 80

SESSIONAL PAPER No. 21

APPENDIX No. 2.

REPORT OF THE COMMISSIONER OF LIGHTS.

The Deputy Minister
of Marine and Fisheries,
Ottawa.

SIR,—I have the honour to submit the fourteenth annual report of this branch. The principal work performed has been an extension of the buoy and beacon services, together with the maintenance of lights and other aids to navigation throughout the Dominion, and the maintenance and inspection of public wharves under the control of the Department of Marine and Fisheries. The operations of this branch are set forth in tabular form in the following two inclosures, namely:—

Inclosure No. 1.—Statement, by districts, showing the number of lights of the several orders, gas beacons, lightships, lightboats, lightkeepers, fog signals, gas and signal buoys, submarine bells, lighted spar buoys, floats and dolphins, unlighted buoys, stakes, bushes, dolphins, spindles and beacons maintained during the fiscal year ended 31st March, 1917.

Inclosure No. 2.—Statement, by localities, giving the number of unlighted buoys, stakes, bushes, dolphins, spindles and beacons maintained during the fiscal year ended 31st March, 1917.

In former reports it had been my habit to add further inclosures giving the names of lighthouses and lightkeepers; a complete list of stations at which gas buoys were maintained; new establishments of gas and signal buoys; withdrawals; and a statement giving complete list of stations at which submarine bells were maintained. As this information is already contained in other government publications it is not repeated here.

In conclusion I desire to express and record my appreciation of the able assistance rendered by my staff, and the untiring application to duty exhibited by each member. It would not have been possible to carry out the large and increasing amount of work which devolves upon this branch without the co-operation of all the officers connected with it.

I have the honour to be, sir,

Your obedient servant,

J. G. MACPHAIL,

Commissioner.

Office of the Commissioner of Lights,
Department of Marine and Fisheries,
OTTAWA, March 31, 1917.

8 GEORGE V, A. 1918

INCLOSURE No. 1.—Statement, by districts, showing the number of lights of the several orders, light-ships, lightboats, lightkeepers, fog signals, buoys, submarine bells, etc.

	1st order lights.	2nd order lights.	3rd order lights.	4th order lights.	5th order lights.	6th order lights.	7th order lights.	Gas beacons.	Pressurized lights & other minor types.	Catoptric lights.	Electric lights.	Total.	Lightships.	Lightboats.	Lightkeepers.	Diaphones.	Fog guns and bombs.	Fog horns and trumpets.
New Brunswick		2	4	20	14	12	63	1	17	34	4	178		1	149	14		2
Nova Scotia	3		10	52	29	32	67		27	76	13	313			290	22	1	1
Prince Edward Island				15		2	7		4	51	1	83			52	1	1	1
Quebec	5	7	15	22	6	17	38	4	18	26	10	128	4		179	21	6	
Hudson Bay and Strait								10				10						
Montreal				10	11	7	18	6	34	146		235	2		164			
Prescott			2	17	5	8	19	21	8	7	3	88			49	10		
Parry Sound		5	7	22	14	15	51	26	34	63	20	258	1		147	21		1
Kegonsa							3			2	2	9			6			
Manitoba				2	3		4		1	3	1	16			10			
British Columbia	5	1	7	12	8	2	18	57	11	7	16	142	1		80	24		
Total.....	13	7	44	172	91	100	284	125	156	477	73	1,560	12	1	1,126	113	8	5

	Fog whistles.	Sirens.	Fog bells.	H and fog horns.	H and fog bells.	Total fog signals.	Fog signal stations only.	Gas buoys.	Gas and whistling buoys.	Gas and bell buoys.	Whistling buoys.	Bell buoys.	Total gas and signal buoys.	Submarine bells.	Lighted spar buoys, floats and dolphins.	Unlighted buoys.	Stacks and bushes.	Unlighted dol- phins, spindles and beacons.
New Brunswick	1		5	18		4	4	14	11	2	2	27	63	6		86	1,427	18
Nova Scotia	4		7	57		92	4	5	21	11	16	44	97	6		1,478	122	20
Prince Edward Island				2		2		1	5		4	5	15			397	32	4
Quebec	4	1		24	3	32	1	63		7	1	3	74	5	1	246	125	42
Hudson Bay and Strait																		
Montreal								87					87		1	524	17	128
Prescott			3	7		20		16		1		1	38		134	246	11	4
Parry Sound	2	1	7	36		46		36	4	8		2	50	1	38	488	28	10
Kegonsa																306		
Manitoba						4						2	2			21		
British Columbia.....			12	8		44	4	3	11	4	2	3	23	4	14	257		113
Total	11	2	22	122	3	330	13	145	52	33	32	87	440	22	188	4,887	2,227	387

SESSIONAL PAPER No. 21

ENCLOSURE No. 2.—Statement, by localities, giving the number of unlighted buoys, stakes, bushes, dolphins, spindles and beacons maintained throughout the Dominion during the fiscal year ended 31st March, 1917.

NEW BRUNSWICK DISTRICT.

Locality and number of stakes, etc.	No. of Buoys.
Aldouane, 42 bushes.....	5
Alma.....	3
Baie du Vin, 8 bushes.....	12
Baie Verte and Port Elgin, 30 stakes.....	6
Bartibog, 12 bushes.....	1
Bathurst.....	29
Black Brook, Miramichi river.....	3
Buctouche, 34 stakes.....	22
Buctouche river, 260 bushes.....	
Campobello.....	10
Caraquet.....	16
Caraquet to Mizzenette.....	3
Chance harbour.....	2
Cocagne, 30 stakes.....	11
Dalhousie and Restigouche.....	10
Digdequash.....	6
Dipper harbour.....	4
Dorchester.....	3
Grande Anse.....	4
Grande Digue, 30 stakes.....	2
Grand lake, bushes.....	32
Grand Manan, 1 spindle.....	28
Grandon channel, Miramichi river.....	20
Grassy island, 18 stakes.....	7
Great Shemogue.....	7
Hatfield point, bushes.....	1
Huckleberry gully, 28 bushes.....	4
Indian point bar channel, 10 bushes.....	3
Kouchibouguac and Black Lands gully, 150 bushes.....	14
Letete, L'Etang and Bliss harbour.....	14
Little Shemogue, 2 poles.....	5
Little Shippigan.....	4
Magaguadavic.....	13
Maquapit and French lakes, 57 stakes.....	13
Miramichi bay and river, bushes.....	35
Miramichi river, northwest branch.....	14
Miramichi river, southwest branch.....	9
Miscou.....	8
Musquash.....	4
Napan river, 24 stakes.....	3
Neguac.....	19
Petit Rocher.....	1
Pokemouche, bushes.....	6
Richibucto.....	38
Richibucto, Rexton and Browns yard.....	30
St. Andrews, 3 stakes.....	16
St. Charles river, 50 stakes.....	
St. John river, 154 stakes.....	79
St. Louis, 70 bushes.....	9
St. Louis river, 54 bushes and stakes.....	
St. Simon bay, 15 bushes.....	6
Salmon river, bushing.....	15
Scotchtown.....	6
Shampers wharf, 15 bushes.....	2
Shediac.....	19
Shippigan, 27 pickets, 30 stakes, 1 beacon.....	27
Tabusintac.....	20
Tracadie, north gully, 100 bushes.....	12
Tracadie, south gully, 30 bushes.....	5
Tynemouth creek.....	4
Washademoak, 144 bushes.....	2
West isles, 4 spindles.....	23

8 GEORGE V, A. 1918

STATEMENT, by localities, giving the number of unlighted buoys, etc.—*Con.*NEW BRUNSWICK DISTRICT—*Concluded.*

Locality and number of stakes, etc.	No. of Buoys.
Maintained by agency—	
Bell buoys.....	25
Whistling buoys.....	8
Conical and can buoys.....	63
Spar buoys.....	35
Spindles and day marks...	12

NOVA SCOTIA DISTRICT.

Advocate harbour.....	6
Amherst basin.....	4
Apple river.....	8
Ardouise.....	5
Argyle river and sound.....	10
Arichat.....	19
Barrington, 11 dolphins.....	43
Bear river.....	8
Beaver harbour.....	8
Beaver narrows, C. B.....	2
Big Lorraine.....	3
Birchton.....	5
Blandford.....	5
Bridge water.....	6
Brule.....	9
Calf island bay.....	5
Canso and St. Andrews passage, 20 winter buoys.....	27
Cape Negro and Northeast harbour.....	17
Caribou.....	6
Chester and Gold river.....	28
Cheticamp.....	12
Chezzetcook and Petpeswick.....	10
Christmas island and Barra strait.....	11
Clarks harbour.....	17
Cockerwitt pass.....	19
Coddle harbour.....	6
Cooks cove (Toby cove).....	4
Crooked channel.....	5
Crow harbour.....	3
Denny river.....	3
D'Escousse and Lennox passage.....	29
Dover.....	4
East bay, Bras d'Or.....	5
East Dover.....	3
Eskasoni.....	6
Fourchu harbour.....	15
Freeport, 1 beacon.....	3
Gegoggin.....	7
Gillies point, Boulaceet.....	1
Glace bay.....	1
Goose bay, 35 stakes.....	8
Grand Etang.....	1
Great Bras d'Or.....	7
Guysborough.....	5
Habitants bay.....	5
Harrington.....	3
Havre Bouche, 6 stakes.....	1
Indian harbour.....	1
Ingonish, South bay.....	9
Isaac harbour, 9 winter buoys.....	13
Jeddore, winter buoys.....	9
Johns harbour.....	5
Ketch harbour.....	6
Kieley cove, Blind bay.....	1
L'Anse.....	5
Larry river, 7 stakes.....	3
Liscomb.....	6

SESSIONAL PAPER No. 21

STATEMENT, by localities, giving the number of unlighted buoys, etc.—*Con.*NOVA SCOTIA DISTRICT—*Continued.*

Locality and number of stakes, etc.	No. of Buoys.
Little Bras d'Or.....	12
Little Dover.....	9
Little Liscomb.....	4
Little Narrows.....	10
Liverpool.....	8
Lockeport.....	9
Louisburg, 6 winter buoys.....	8
Lunenburg.....	8
Lunenburg, back cove.....	9
Lunenburg, middle south, 6 winter buoys.....	16
Mabou, stakes.....	20
Mahone bay.....	9
Mainadieu.....	5
Marble Mountain.....	5
Margaree harbour, 7 stakes.....	2
Marie Joseph, 11 winter buoys.....	16
Martins brook.....	6
McKinnon harbour.....	6
McNab cove.....	2
McVarish shoal and Campbell point, Bras d'Or..	4
Merigomish, bushes.....	6
Monsellier, 4 stakes.....	6
Musquodoboit.....	14
Neil harbour.....	1
Northport.....	12
Orangedale.....	3
Parrsboro.....	6
Pennant harbour.....	9
Petitdegrat, 6 winter buoys.....	18
Pope harbour.....	3
Port Bickerton, 3 winter buoys.....	5
Port Felix, 1 stake.....	11
Port Hood, 2 winter buoys.....	5
Port l'Hebert.....	13
Port Latour.....	16
Port Medway.....	4
Port Morien.....	1
Port Mouton.....	9
Pringle harbour.....	2
Prospect, lower.....	10
Prospect, upper.....	4
Pubnico.....	21
Pugwash.....	8
River Bourgeois.....	6
River John, stakes.....	3
River Phillip.....	6
Rose bay, lower.....	6
Roseway.....	5
St. Ann.....	12
St. Margaret bay.....	5
St. Mary river, winter buoys.....	11
St. Mary river to Sherbrooke.....	18
St. Peter bay, 4 winter buoys.....	16
St. Peter inlet.....	12
Sambro.....	16
Shad bay.....	8
Shag harbour.....	17
Sheet harbour, 5 winter buoys.....	9
Shelburne.....	5
Ship harbour (lower), 6 winter buoys.....	11
Ship rock, strait of Canso.....	1
Shulee.....	8
Smith island, West bay.....	1
Sober island to Ecum Secum.....	22
Spry bay.....	4
Stoney island, Baddeck.....	1
Sydney inner harbour.....	2
Tancook island.....	3
Tangier, 7 winter buoys.....	7

8 GEORGE V, A. 1918

STATEMENT, by localities, giving the number of unlighted buoys, etc.—*Con.*NOVA SCOTIA DISTRICT—*Concluded.*

Locality and number of stakes, etc.	No. of Buoys.
Tatamagouche, 46 stakes...	15
Tor bay	3
Three Fathom harbour.....	5
Tidnish, stakes	5
Tor bay.....	21
Tusket river.....	9
Tusket Wedge, 3 spindles....	17
Voglers cove.....	3
Wallace, 33 stakes.....	11
Walton harbour.....	1
Washaback river.....	5
West bay.....	5
West Chezzetcook.....	5
West Dublin.....	12
Weymouth.....	19
Whitehaven, 5 winter buoys.	8
Whycocomagh.....	4
Yarmouth, 44 dolphins.....	9
Maintained by agency—	
Bell buoys.....	44
Whistling buoys.....	16
Conical and can buoys..	73
Spar buoys.....	30

PRINCE EDWARD ISLAND DISTRICT.

Bay Fortune.....	1
Beach point.....	3
Belle river.....	3
Brae harbour.....	5
Brudenell river.....	5
Cardigan, lower, 2 winter buoys.....	7
Cardigan, upper.....	20
Cascumpeque, 13 stakes.....	16
Covehead.....	3
Crapaud, stakes.....	6
East river, stakes and bushes.....	14
Egmont bay, north, 19 stakes.....	9
Egmont bay, south, 13 stakes.....	3
Georgetown.....	19
Goose and Palmer harbours.....	5
Grand river, 1 beacon, bushes.....	20
Grand Tracadie.....	4
Little channel.....	1
Montague.....	23
Montague.....	6
Montague, 10 stakes.....	7
Murray harbour and rivers, 25 stakes.....	37
New London, 30 stakes.....	17
North river, 14 stakes.....	3
Orwell and Vernon river, 36 bushes, 3 beacons.....	3
Pinette, 24 bushes.....	8
Port Hill.....	12
Pownal, 10 stakes.....	6
Rustico, 30 stakes.....	3
St. Peter harbour, 6 stakes.....	6
Savage harbour.....	5
Souris.....	3
Summer-side, 10 stakes.....	4
West point.....	16
West river, 65 stakes.....	2
Wood islands.....	8
Maintained by agency—	
Bell buoys.....	5
Whistling buoys.....	4
Conical and can buoys.....	47
Winter spar buoys.....	21
Barrel buoy.....	1

SESSIONAL PAPER No. 21

STATEMENT, by localities, giving the number of unlighted buoys, etc.—*Con.*

QUEBEC DISTRICT.

Locality and number of stakes, etc.	No. of Buoys.
Amherst harbour, Magdalen islands.....	9
Anse a Beaufils.....	1
Anse aux Gascons.....	1
Barachois de Malbaie.....	1
Beaudry shoal, Gaspé basin.....	1
Beauport.....	3
Bonaventure.....	11
Cap Chat.....	1
Cape Cove.....	1
Cape d'Espoir.....	1
Carleton point.....	1
Echourie rock (Serpent reef).....	1
Entry island and Amherst island passage, M. I.....	7
Fox river.....	1
Gaspé.....	6
Grand Entry, Magdalen islands.....	17
Gros-cap-aux-Os.....	1
House harbour, Magdalen islands.....	11
Lake St. John.....	14
Lake St. John, Ashuapmouchouan river, 30 bushes.....	7
Lake St. John, Mistassini river, 60 bushes.....	12
Lake St. John, Peribonka river and Roberval, 35 bushes.....	16
Little river east.....	1
Little river west.....	1
Maria.....	2
Matane.....	2
Natashkwan.....	4
New Richmond.....	3
Nouvelle roads.....	2
Paspebiac.....	1
Pentecost.....	1
Percé.....	2
Point St. Peter.....	1
Port Daniel.....	1
Portneuf-en-bas.....	9
Restigouche river.....	12
Ste. Anne river.....	1
St. Godfroy.....	1
St. Michel de Bellechasse.....	4
St. Thomas de Montmagny.....	8
Saguenay river, vicinity of Chicoutimi.....	33
Maintained by agency—	
Conical and can buoys.....	31
Bell buoys.....	1
Steel winter spar buoys.....	10
Beacons.....	42

MONTREAL DISTRICT.

Lake Memphramagog.....	1
Richelieu rapids, bushes.....	
Richelieu river, above St. John.....	27
Richelieu river, Sorel to Chambly.....	37
Riviere des Prairies.....	11
St. François river, 80 balises, 12 day beacons.....	
St. Maurice river, Grandes Piles to Latuque, 106 day beacons.....	74
Yamachiche river, 30 balises, 4 day beacons.....	
Yamaska river, 60 balises, 6 day beacons.....	
Maintained by agency—	
Conical and can buoys.....	54
Spar buoys.....	316
Taper buoys.....	4

8 GEORGE V, A. 1918

STATEMENT, by localities, giving the number of unlighted buoys, etc.—*Con.*

PRESCOTT DISTRICT.

Locality and number of stakes, etc.	No. of Buoys.
Lake Couchiching and narrows, 11 bushes	8
Lake Simcoe	5
Presqu'ile bay	17
Trent canal (number of buoys maintained by Dept. Railways and Canals)	
Maintained by Agency—	
Bell buoys	1
Conical, can, spherical buoys	21
Spar buoys	194
Beacons	4

PARRY SOUND DISTRICT.

Blind river	6
Burke shoal, lake Superior	1
Cache bay, lake Nipissing, 8 stakes	
Clapperton channel, 1 beacon	8
Cloud bay, lake Superior	2
Collingwood	13
Detroit river	25
Goderich	7
Grand reef, lake Superior	1
Kaministiquia river, Fort William, lake Superior	15
Lake Superior, southeastern part	7
Little Current	26
Michipicoten	6
Mud lake, river St. Mary, 2 beacons	11
Mutton island, lake Superior	2
Pendroke	29
Penetanguishene	10
Pointe au Baril, 15 beacons	3
Port Arthur	20
Port Rowan	10
River Thames	7
Rondeau	6
St. Clair river, Chenal Ecarte	1
St. Joseph channel, lake Huron, 1 beacon, 5 winter buoys	25
Sault Ste. Marie canal approaches	32
Silver islet, lake Superior	2
Southampton	7
South Baymouth	4
Stokes bay	6
Sturgeon river, 20 stakes	16
Victoria island, lake Superior	3
Wabigoon	53
Maintained by Agency—	
Bell buoys	2
Conical buoys	1
Spar buoys	115

KINORA DISTRICT

Maintained by Agency	336
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MANITOWA DISTRICT

Black river	6
Red river	7
Warrens landing	12

SESSIONAL PAPER No. 21

STATEMENT, by localities, giving the number of unlighted buoys, etc.—*Con.*

BRITISH COLUMBIA DISTRICT.

Locality and number of stakes, etc.	No. of Buoys.
Arrow lakes, upper and lower.....	16
Coal harbour.....	7
Fraser river.....	30
Kootenay lake, northwest arm.....	11
Pitt river.....	9
South Thompson river, 4 day beacons... ..	18
Maintained by Agency—	
Bell buoys.....	3
Whistling buoys.....	2
Conical and can buoys.....	51
Platform buoys.....	27
Spar buoys.....	53
Day beacons.....	109

8 GEORGE V, A. 1918

APPENDIX No. 3.

RIVER ST. LAWRENCE SHIP CANAL.

REPORT OF SUPERINTENDENT.

OTTAWA, July 25, 1917.

The Deputy Minister of Marine,
Ottawa, Ont.

SIR,—I have the honour to present the following annual report on the operations for the improvements of the River St. Lawrence Ship Channel and Signal Service, during the fiscal year ending March 31, 1917, also on the ice-breaking operations during the winter of 1916-1917.

I have the honour to be, sir,

Yours obediently,

V. W. FORNERET, B.A.Sc.,

Superintending Engineer.

HISTORY OF THE RIVER ST. LAWRENCE SHIP CHANNEL.

MONTREAL TO QUEBEC.

The St. Lawrence, owing to its situation, is the natural route from the Atlantic to the northern and northwestern half of the North American continent. The possibility of converting Montreal into a deep-water seaport was first suggested in the year 1825, when the Lachine canal was completed and connected Montreal with the Great Lakes, establishing the route commercially.

Light draught sailing vessels could then reach Montreal without trouble, except during a few weeks in the autumn, when they resorted to lightering. Surveys were made with the object of increasing the depth of water in the waterway. After these were completed, the question of which channel to adopt through lake St. Peter was hotly discussed, some favouring the "natural," or old ship channel, and others the "straight channel" through the St. Francis bank. Finally, it was decided to proceed with the work of deepening the "straight channel," the aim being to obtain a channel 150 feet in width and to a depth of 14 feet at the lowest water, instead of only 10 feet 6 inches, at lowest water, as existed in the old ship channel which governed the available depth for navigation between Quebec and Montreal.

The "Board of Works" of Canada was entrusted with the task and began operations in the spring of 1844 and continued till the month of June, 1846, when the work was suspended; the management was changed, and the execution of the work transferred from the Board of Works to the control of the Commissioners of Public Works. The dredging was again resumed in the month of September of the same year. Owing to continued opposition, the work of cutting the "straight channel" was finally suspended on the 16th of September, 1847, and subsequently abandoned. After over sixty years it is now considered that the "straight channel," as commenced, would have been preferable. Nothing more was done on lake St. Peter by

SESSIONAL PAPER No. 21

the Commissioners of Public Works for three years. The Harbour Commissioners of Montreal then came forward and offered to complete the project expeditiously and economically. The proposal was accepted and an act was passed in August, 1850, transferring the work of improving the ship channel from the Commissioners of Public Works to the Harbour Commissioners of Montreal, who were empowered to charge a tonnage duty sufficient to pay 8 per cent interest upon the outlay with a 2 per cent contribution to the sinking fund.

16-foot Channel.—The Harbour Commissioners, after examination and the best advice obtainable, adopted the present channel with five tangents instead of two long straight courses, as at first commenced in the "straight channel." Operations were begun in June, 1851, to dredge this channel to 16 feet at low water. Most of the dredging required to attain this depth was in lake St. Peter, but some small shoals had to be removed at île Delorier and Lavaltrie channel, and after steady work it was all completed in 1854 to a depth of 16½ feet at low water and with a width of from 250 to 300 feet.

20-foot Channel.—The work of deepening the channel to attain a depth of 20 feet at low water with a width of 300 feet was continued by the Harbour Commissioners and accomplished in November, 1865. Dredging was necessary at pointe aux Trembles (en-haut) channel and lake St. Peter to obtain this depth. Several obstructions had also to be removed in order to maintain a more direct channel between cap St. Michel and Lavaltrie, and in Lavaltrie channel. The "South" or "Vercheres" channel had been selected for improvement instead of the old channel or "north channel" by way of Repentigny and St. Sulpice.

The operations of 1866-1869 were of limited extent, and consisted chiefly in cleaning up and improving the 20-foot channel which was obtained in 1865.

The completion of the 20-foot channel marked an important era in the history of the St. Lawrence route. The success of the work amply demonstrated that the St. Lawrence could be made available up to Montreal for navigation by the largest class of ocean merchant ships, and the extraordinary increase of Canadian commerce that attended the improvement of the channel, showed how imperatively it was demanded by the trade of Canada. No sooner was the new channel fairly in use than the rapid increase of ocean traffic suggested a further deepening, and a vigorous agitation was commenced for a 24-foot channel at low water.

25-foot Channel.—It was then resolved to deepen the channel to 25 feet, which was accomplished in the fall of 1882. A new channel on the south side of the river, opposite Contrecoeur, and parallel to the Lavaltrie channel, was adopted for this channel, as it was wide and deep and required very little dredging. It was called the Contrecoeur channel. This gave a clear depth of 25 feet at low water at all points above cap à la Roche, but at that point and cap Charles an average tide was necessary to pass with the full depth available elsewhere. In the straight parts of the channel the minimum width was 300 feet and at the bends 325 to 450 feet.

27½-foot Channel.—Owing to the growth of trade, it was seen that still further improvement of the channel was required, and the Harbour Commissioners of Montreal obtained permission, by an Order-in-Council passed the 14th of June, 1883, to proceed with a further deepening, to 27½ feet at low water. The work was vigorously pushed forward, and by 1888, the channel was completed to this depth, from Montreal to cap-à-la-Roche a distance of 107½ miles, from which point to Quebec the tide was necessary to obtain that depth. The channel was 300 feet wide in the straight portions, and 450 feet at the bends.

At this juncture the Federal Government, realizing that the tonnage charges upon the ship channel were detrimental to the mercantile expansion of Montreal, passed an

8 GEORGE V, A. 1918

Act in 1888, making the ship channel a national and not a local work, and relieved the Harbour Commissioners of their indebtedness with respect to the ship channel and transferred the work, plant, etc., to the Department of Public Works.

The tonnage dues were abolished accordingly, so that since the work came under Federal control, the river St. Lawrence Ship Channel has been free to commerce of the world.

The Harbour Commissioners carried on the operations for the Department of Public Works till the end of the season of 1888, when the official connection of the Commissioners with the ship channel ceased, after having continued for over 38 years.

In January, 1889, the control and management of the work was assumed by the Department of Public Works. During the winter, extensive repairs were made to the dredging plant, which, on the opening of navigation, was set to work at cap-à-la-Roche, Poullier Rayer and cap Charles, in deepening the channel at these points to 27½ feet at low water, spring tides.

From this date to 1898, the Department of Public Works continued operations, and completed the difficult rock work at cap à la Roche and cap Charles to 27½ feet at low water. In addition many portions of the channel were cleaned up, straightened, and several curves and narrow places widened. Surveys were made and channels were dredged through several shoals between cap Charles and Quebec to avoid the necessity of waiting for the tide.

30-foot Channel.—The unusually low water of 1895 and 1897, and the increased size of vessels, urgently called for a wider and deeper channel, and larger and more powerful dredges and plant were required.

In 1899 the dredging plant was in a condition to warrant a more extensive plan of operations.

The low water of 1897, the lowest on record, except the short period of unusually low water of 1895, was adopted as the new datum for the 30-foot channel, and is nearly 1½ to 2 feet lower than the ordinary low water plane of the 27½-foot channel. The object, therefore, was to realize in the shortest possible time, a channel 450 feet wide on the tangents and from 500 to 750 feet wide at the curves. An anchorage 800 feet wide was also to be provided at White Buoy curve in lake St. Peter. The work also included much straightening of the channel.

The ship channel continued under the control of the Department of Public Works until 1904, when an Order in Council was passed on March 11, transferring the management and control of the River St. Lawrence Ship Channel, together with the dredging and ship-building plant to the Department of Marine and Fisheries, so as to place the supervision of the improvements to navigation on the St. Lawrence route under the department directly responsible for the pilotage and aids to navigation.

Under this department the work was vigorously continued, so that the season of 1907 saw the completion of the channel from Montreal to Batiscan to 30 feet depth at the extreme low water of 1897, a distance of 101 miles. From that point to Quebec the tide could be used to obtain the same depth. There still remained to be done however, some widening in lake St. Peter. By the end of the season of 1910, the dredging was all completed to 30 feet to the head of cap à la Roche curve, six miles below Batiscan, including all the widening between Montreal and that point. The completion of this work allowed more dredges to be placed in the cap à la Roche district, where the dredging operations are the most difficult, the current being strong and the material to be removed mostly hard shale rock.

The dredging operations were then carried on with renewed energy, and considering the difficulty of working in this locality, good progress was made. Cap Charles channel has been completed to 30 feet at E.L.W. and widened from 300 to 450 feet and from 500 to 600 feet at the curve at the lower end of the channel. Grondines channel has also been completed to 30 feet at E.L.W. of 1897, and widened from 300

SESSIONAL PAPER No. 21

to 450 feet. New range lights were constructed to mark the new centre of the two channels and the buoys moved to give the extra width.

There still remains a short distance to be deepened to 30 feet at cap à la Roche curve, the progress here being very slow owing to the extreme hardness of rock to be removed and to strong current. The widening of this channel from 300 to 450 and 550 feet is very nearly completed.

The only place that now requires dredging to obtain 30 feet between cap à la Roche and Quebec is at St. Augustin bar, 14 miles above the latter place. Advantage must be taken of the tide, by deep-draught vessels, to pass this place, the range of tide being $16\frac{1}{2}$ feet at springs and 11 feet at neaps.

35-foot Channel.—In 1910 the question of further deepening the channel was considered, as the size of the vessels coming up the St. Lawrence was increasing so rapidly that they would likely find the 30-foot channel not deep enough for their requirements. The Government, therefore, resolved to proceed immediately with the deepening of the ship channel to 35 feet at the extreme low water of 1897, and in 1910 this work was started on lake St. Peter.

Owing to the undulating character of the river-bed, dredging is not required throughout the whole length of the channel between Montreal and Quebec. At some points the natural depth is more than sufficient to secure 35 feet at extreme low water. Out of a total distance of 160 miles, 82.24 miles will have to be dredged to obtain 35 feet at E.L.W.

At the end of the season of 1916 good progress had been made on this work; 36.52 miles had been dredged to 35 feet, leaving 45.72 miles yet to be done.

SHIP CHANNEL BELOW QUEBEC.

In the spring of 1901 the shipping interests of Montreal brought to the attention of the Honourable the Minister of Public Works the fact, that deep-draught vessels had to wait for the tide to pass St. Thomas and Crane Island shoals, which caused these vessels to lose a great deal of valuable time. The officers of the Marine and Fisheries Department at Quebec, who had an intimate knowledge of this part of the river, strongly recommended improving the north channel, commencing below the island of Orleans, as being much better, more easily navigated, and having less ice in winter than the south channel. Orders were given to the ship channel staff which was then under the Department of Public Works to make a survey and examination of the north channel with a view to reporting on the practicability and cost of improving that route and adopting it for navigation.

In 1902 a similar survey was made of the south channel, to ascertain what improvements would be required to make a 30-foot channel on the line of the existing route.

A comprehensive report was made on February 24, 1903, by Mr. F. W. Cowie, C.E., who was then superintending engineer, to the acting chief engineer of the Public Works Department, on the question of the proposed improvements below Quebec.

The report did not recommend the adoption of either route, but advised that the choice should meet with the approval of the underwriters, the shipping interests, and the pilots.

The Transportation Commission visited the locality, going over each channel, and took evidence on the subject. It was finally decided to improve the south channel by dredging it to 30 feet at extreme low tide and to a width of 1,000 feet.

The parliamentary appropriation, to enable the commencement of improving the south channel below Quebec, became available only late in the autumn of 1905. The ship channel dredging operations had been transferred to the Department of Marine and Fisheries in 1904. Arrangements were made to have a powerful steel twin-screw

8 GEORGE V, A. 1918

hopper hydraulic dredge, constructed at the government shipyard at Sorel. It was estimated that it would take a year and a half to build and equip this powerful machine, which was carefully designed for that special work.

In March, 1906, the Department of Marine and Fisheries received very strong representations that these improvements could not be delayed, and that to wait till 1907 to make a commencement would seriously menace the proposed plans for a largely improved steamship service. The nature of the work below Quebec, the exposed position, want of shelter, etc., made the ordinary American type of dredge out of the question.

The self-propelling sea-going hopper type, as almost altogether used in Great Britain being required, inquiries were made from the dredge builders in Great Britain and shipping agents for a dredge immediately available for this work.

The builders had none on hand, and the only suitable ones offered were in Australia and South Africa. Messrs. Ferguson Bros., one of the largest firms building dredging and harbour plant, wrote stating that there was not a hopper dredger of the capacity mentioned to be bought in England. Messrs. Simons & Company, also large and successful dredge builders wrote that all their large dredges were fully employed, and they did not think there was a possibility at that time of procuring a second-hand hopper dredger either hydraulic or bucket ladder type.

A Dutch pump dredge, at New Orleans, was offered by Messrs. H. E. Moss & Company of Liverpool, England, for £34,000. The price being very reasonable, and on authority of Council, the minister ordered an examination with a view to purchase. The only objection to this dredge was that it had no cutter and was therefore not suitable for dredging anything but sand or soft silt. After examination it was decided to purchase it, as Messrs. Moss & Co., had reduced their offer to £30,000.

The dredge was purchased on April 20, 1906, at that price, or \$146,000 with interest to date of payment. The vessel was docked and made ready for the long voyage and all expenses of repairs, wages, provisions, stores, etc., until the dredge reached Quebec, amounted to \$10,942.14 and \$4,574.17 insurance.

The dredge *Galveston* arrived at Quebec from New Orleans under her own steam, having been twenty-nine days on the voyage. She continued up to Sorel to be thoroughly overhauled and fitted out, additional quarters for the crew being also provided.

South Channel (30 feet at E.L.W.).—The Government having decided to first improve the south channel, preparations were made to start the work. The project had in view a channel 30-feet in depth, at extreme low tide at Beaujeu bank and St. Thomas' flats, with a width of 1,000 feet.

The changes and improvements on the dredge *Galveston* being completed, she left Sorel for Beaujeu bank, off Crane island on August 11, 1906, and began operations on August 13, the material consisting of coarse sand and gravel with some layers of soft blue clay. The new hopper hydraulic dredge *Beaujeu* was launched at the government shipyard at Sorel on December 2, 1906, and completed on November 1, 1907. She was then taken down to commence operations on the channel through St. Thomas flats, the material to be dredged being soft clay, sand and some stones.

With these two powerful dredges, good progress was made with the work. The Beaujeu bank channel was completed in 1909 to 30-feet at extreme low tide and the widening finished in 1910. The channel was then opened to navigation.

The St. Thomas channel was completed to a depth of 30 feet at extreme low tide and to a width of 1,000 feet during the season of 1912. The channel was then marked out with gas buoys and opened to navigation. This was considered a great improvement, as deep-draught vessels were not obliged to anchor to wait for the tide to pass Beaujeu bank or St. Thomas flats, thereby saving much valuable time.

SESSIONAL PAPER No. 21

North Channel (35 feet at E.L.T.).—The south channel being now completed, the powerful hydraulic dredge No. 8 (*Beaujeu*) was enabled to be placed at work on the north channel where dredge No. 9 (*Galveston*) had already been operating for a season, as the Government had decided to dredge the north channel between St. Jean, island of Orleans, and Goose cape, to a depth of 35 feet at extreme low tide, and to a width of 1,000 feet.

The two powerful sea-going hydraulic dredges No. 8 and No. 9 have since then been at work in that channel, the material to be dredged being sand and gravel.

Although these two dredges have made good progress, there still remained at the end of the season of 1916, 5,082,505 cubic yards to be removed.

Owing to requests made by the shipping interests to complete the channel as soon as possible, the Government gave a contract, on the 27th of October, 1914, to the Canadian Vickers Limited, of Montreal, to build one of the largest sea-going elevator dredges in the world; delivery was promised for July 31, 1916. In December, 1914, the Messrs. Vickers applied to the department for an extension of time, owing to their plant in Montreal being taken over by the Imperial Government for Admiralty work. Their application was granted. On completion of this work the construction of the dredge was commenced. The dredge was launched on the 18th of November, 1916, and the builders expect to deliver it completed during next summer.

With this addition to the dredging fleet below Quebec, the completion of the north channel will be hastened.

RIVER ST. LAWRENCE SHIP CHANNEL BETWEEN MONTREAL AND FATHER POINT—
ACCIDENTS DURING SEASON 1916.

MONTREAL TO QUEBEC.

Steamer Haulwen.—June 4. Transport, outward bound, went aground outside of channel between buoys 175M and 173M, Montreal harbour. Was refloated.

Steam barge W. B. Morley.—June 17. Grounded outside channel near Plum island. Was refloated.

Steamer Hochelaga.—July 19. Dominion Coal Company, bound for Sydney, N.S. Collided with steamboat *Etoile* off Portneuf (en-haut). The latter vessel was beached, and after temporary repairs were made she floated off at high tide and proceeded to Quebec for permanent repairs. The *Hochelaga* was not damaged.

Steam barge Fordonian.—August 4. Grounded outside channel at the entrance of lake St. Peter. Was pulled off. No damage.

Steamer Haulwen.—August 12. 'Transport.' Grounded near St. Croix bar. Was refloated. No damage.

Tug Chambly.—October 4. Belonging to ship channel fleet, attending dredge No. 2 at cap à la Roche. Collided with the dredge and sank in the channel. No lives lost. The tug was immediately raised and towed to the Government shipyard at Sorel for repairs.

Steamer St. Winifred.—November 18. Grounded a little above Batiscan while turning to anchor. Was refloated and proceeded on.

Steamer Hungerford.—November 19 grounded seven miles below Three Rivers, was refloated and proceeded on.

Steamer Jason.—November 22 went aground when entering the Channel to Vickers drydock basin Montreal harbour. Due to manoeuvring. Was pulled off.

Most of the accidents mentioned above are of a minor nature, and none can be attributed to any fault of the ship channel.

8 GEORGE V, A. 1918

QUEBEC TO FATHER POINT.

Steamer Solbakken.—October 4. Norwegian, inward bound collided with Admiralty transport *Valetta* off White island. No damage done.

Steam barge, Iroquois.—October 27. Canada Steamships Line, outward bound went ashore on Hare island. Was refloated.

None of the above accidents which occurred between Quebec and Father point can be attributed to the ship channel.

MARINE SIGNAL SERVICE.

Signal stations have been established for the purpose of maintaining communication between ship and shore by means of flag signals.

This system of stations extends from St. John, N.B., Halifax, N.S., Cape Race, Nfld., and Belle Isle, up the gulf and river St. Lawrence, and through the Great Lakes to Sault Ste. Marie, Ont.

Following is a complete list of stations:—

EAST OF QUEBEC.

Name of Station.	Location.	Nautical Miles from Quebec.	Means of Communication.
R Quebec.....	Custom House.....	0	Telephone.
X St. Jean d'Orleans.....	Shore end of wharf	14	"
Cross Island	Lighthouse	32	"
L'Islet	100 yards east of church.....	40	Telegraph.
Cape Salmon	Lighthouse	81	" and Telephone
Riviere du Loup	Shore end of wharf	92	Telegraph
Father Point	" "	157	"
Little Metan	Lighthouse	175	"
Metan	"	200	"
Pointe des Monts	"	219	"
Cape Chat	"	234	"
Riviere du Martin	"	260	"
Cape Margalen	"	294	"
Farm Point	"	325	"
Cape des Rochers	"	349	"
Cape d'Esper	"	377	"
Point Macquenne	"	400	"
West Point, Anticosti	"	332	"
Southwest Point, Anticosti	"	360	"
South Point, Anticosti	"	415	"
Heath Point, Anticosti	"	438	"
Point Esprit, N.B.	"	462	"
Anticosti Island, Magdalen Island	"	481	"
St. Paul Island, C.B....	Main station.....	540	Telephone.
Murray Point, C.B., N.S.	Lighthouse	537	"
Flat Point, N.S.....	"	575	Telegraph.
Cape Race, Nfld.	"	553	"
Cape Race, Nfld.	"	826	"
Point Amour.....	"	673	Wireless Telegraph
Belle Isle	"	734	"
Camperdown, N.S.	Near Wireless Station...		Telephone
Hopewell, N.S.	The Citadel.....		"
Brier Island, N.S.	Near Lighthouse		"
Point Lepreaux, N.B.	Lighthouse		"
Partridge Island, N.B....	"		"
St. John, N.B.....	Custom House....		"
Point Tupper, C.B., N.S.	Lighthouse (Gut of Canso)....		"
Long Point, N.B.	(East end)		"

SESSIONAL PAPER No. 21

WEST OF QUEBEC.

Name of Station.	Location.	Nautical Miles from Quebec.	Means of Communication.
Bridge Station	$\frac{1}{2}$ mile above new railway bridge on south shore.....	6	Telephone.
St. Nicholas.....	At Tidal Semaphore.....	12	"
Portneuf.....	In front Lighthouse.....	31	"
Grondines	In old windmill tower	41	"
St. Jean Deschaillons.....	At Tidal Semaphore.....	45	"
Pointe Citrouille.....	Lighthouse.....	55	"
Three Rivers.....	Upper end of Government wharf.....	68	"
Sorel	Lower end of Government wharf.....	100	"
Bellmouth.....	About 500 feet east of Contre-cœur lower range light.....	110	"
Cap St. Michel.....	On extreme point of cap St. Michel.	125	"
Longue Point.....	Point between wharves....	134	"
R Montreal.....	La Sauvegarde Bldg., 92 Notre Dame St. (E.).....	139	"

WEST OF MONTREAL.

		Nautical Miles from Montreal.	
R Lachine Canal.....	Lock No. 2	0	Telephone.
R ".....	Lachine.....	8	"
R Soulanges Canal.....	Cascades Point.....	21	"
R ".....	Coteau Landing	33	"
R Cornwall Canal.....	Cornwall.....	62	"
R ".....	Dickinson's Landing	72	"
R Galops Canal.....	Lift Lock.....	99	Telegraph.
R Welland Canal.....	Port Dalhousie	298	"
R ".....	Port Colborne.....	321	"
R Soo Canal.....	Sault Ste. Marie, Ont	820	"

Stations marked thus "R" are reporting stations only and are not equipped for signalling purposes. Stations marked "X" closed during the period of the war.

BRIEF SUMMARY OF WORK PERFORMED.

- 1. Stations report movements of vessels to Montreal, Quebec, Sydney, Halifax and St. John.
- 2. Stations report weather conditions daily to Montreal, Quebec, Sydney, Halifax and St. John.
- 3. Montreal, Quebec and St. John publish daily bulletins giving weather and ice conditions and movements of vessels.
- 4. Montreal and Quebec publish daily bulletins showing the depth of water at the various points in the river St. Lawrence ship channel.
- 5. The Signal Service offices at Montreal, Quebec and St. John are open day and night for the purpose of furnishing the public with information of shipping matters.
- 6. The telegraph system of the Department of Public Works on the north shore of the gulf of St. Lawrence report the movements of vessels engaged in the coasting trade to the Signal Service at Quebec.

8 GEORGE V, A. 1918

7. The Collectors of Customs at all the seaports in the river and gulf of St. Lawrence, on the Atlantic coast and in the bay of Fundy, report the arrival and departure of vessels engaged in the overseas trade.

8. Lloyd's agents at Quebec are furnished daily with full information of casualties and movements of vessels engaged in the overseas trade to and from ports in the province of Quebec.

9. Lloyd's agents at St. John are furnished daily with full information of casualties and movements of vessels engaged in the overseas trade to and from ports in the Maritime Provinces.

IMPROVEMENTS CARRIED OUT AND CONTEMPLATED.

The Signal Service at Halifax, St. John, North Sydney and Quebec, in the river and gulf of St. Lawrence, and on the Great Lakes, and the telephonic and reporting service between Quebec and Montreal were combined on the 1st April, 1914, under the heading of Signal Service with headquarters at Quebec. This consolidation has greatly facilitated the work and has led to many improvements.

An arrangement was made with the Department of Railways and Canals whereby their officials at the Lachine, Soulanges, Cornwall, Galops, Welland and Sault Ste. Marie canals report several times daily to the signal service at Montreal giving movements of vessels bound to Montreal and points east of that port. In this connection a private telephone line has been established between the signal service office, Montreal, and the canal office at Lachine. This service has proved itself to be very useful, especially to the shipping interests of the port of Montreal, and will be extended from time to time as conditions may warrant.

The signal stations at Point Tupper, C.B., N.S. and Scatarie island, N.S., were put in operation on the 1st April, 1916.

All the various signal stations were kept in good repair, and painting done where required.

OTTAWA, June 28, 1917.

ICE BREAKING, 1916-1917.

SIR,—I have the honour to submit the following report on the work of the ice-breaking steamers *Lady Grey* and *Montcalm* during the winter of 1916-17.

The *Lady Grey* was ordered to Three Rivers on November 23, to be on hand to assist ships through the ice down and up the river if required.

She was able to give assistance to several steamers leaving late, as there was a considerable amount of ice running, due to the extreme cold weather.

On December the 14th, after her work at Port St. Francis was finished she proceeded to Quebec, accompanying the steamer *Mount Temple* which was the last one of the season.

On December the 16th, both ice breakers were called upon to assist in bringing up to Quebec the C.G.S. *Druid*, *Eureka*, and White Island lightship, and also to take down the unfinished steamer *Carib*, which was accompanied by the tug *Bartlett*.

The latter attempt proved to be a failure, owing to the *Carib* not being able to steer through the ice. It was then decided to leave the *Carib* at Murray Bay for the winter.

The *Lady Grey* succeeded in bringing up the C.G.S. *Druid* and the White Island lightship on December 17, and the *Eureka* on December 21. The *Montcalm* arrived with the tug *Bartlett* on December 19.

On December 23 the *Montcalm* accompanied the C.G.S. *Champlain* down to Rivière Ouelle and Murray Bay, and came back the next day with the tug *Rouville*.

SESSIONAL PAPER No. 21

On December 31 the *Lady Grey* was sent down to Brandypot to pick up the light-keeper. She was delayed two days at Grosse isle on account of thick vapour and returned to Quebec on January 4.

On February 28 the *Montcalm* left for the north shore, with 45 passengers and about 90 tons of freight for Murray Bay, Tadousac, Seven Islands and Ellis Bay, Anticosti.

She was unable to reach the last place on account of heavy packed ice and got back to Quebec on March 5.

The *Lady Grey* also made two trips to Grosse Isle, one on December 23 and the other on March 7, when on her way to St. Irenée to bring up about 90 tons of fish plates to Quebec for the Department of Railways and Canals.

On December 16 the ice-bridge formed at the foot of lake St. Peter and Sorel islands and by December 23 the river was frozen over from Port St. Francis up to Montreal.

On February 3 the ice jammed at cap Charles, and on February 12 the ice-bridge was formed from the latter place up to Three Rivers, leaving only an open space of about one mile and a quarter at Batiscan traverse.

Although the winter was severe, the ice-breakers did not have any difficulty in keeping the cap Rouge ice-bridge from forming.

Three jams occurred at the bridge during the winter, the first two on January 20 and February 3, were due to the severe cold weather occurring at neap tides, but they were easily broken up the same day. The third one happened on February 22, caused by batture ice from Les Ecureuils bank jamming at the bridge. Both ice-breakers worked at it for one tide and the next night the remainder of the ice passed down alone.

The ice-breaking operations to open up the channel above, commenced on March 14, when the *Lady Grey* left Quebec to break the jam at cap Charles, which was about 700 feet below gas buoy No. Q77. The *Montcalm* remained at Quebec on the standby in case batture ice should come down and jam at the bridge.

On March 17 it was decided to order back the *Lady Grey* to Quebec, on account of large pieces of batture-ice floating down the river from bay Ste. Croix. The *Lady Grey* helped the *Montcalm* to break these pieces, and as she was making water in the forehold, she was placed on the gridiron at Levis to have a few rivets renewed.

On March 23 the *Lady Grey* went back to resume her work, and by the 27th she had cut through the jams at cap Charles and cap-à-la-Roche up to Batiscan traverse.

On March 28 the *Montcalm* went up to take her turn breaking ice, and by the 30th the cap Charles jam was completely cut away.

The ice-breakers reached Three Rivers in the forenoon of April 5, after breaking their way up easily from Batiscan traverse, and in the afternoon they got as far as Pointe-du-Lac.

As it was a dangerous proposition to attempt to cut the channel through lake St. Peter, on account of the state of the ice, it was decided to send only one ice-breaker at a time to slice all that was possible. The other was to remain at the foot of the lake and break up any piece that might jam at Port St. Francis.

The ice on lake St. Peter started to move on April 15 in the afternoon. As soon as it stopped moving at Port St. Francis, both ice-breakers worked to start it again, and by April 18 the last piece passed down.

The *Lady Grey* then proceeded through lake St. Peter on April 19, and commenced to break the ice jam which had formed in the Sorel islands.

The next day both ice-breakers, after succeeding in breaking up the remainder of this jam, reached Sorel. There still remained only one small jam at Vercheres.

On the morning of April 22, the channel was clear from Quebec to Montreal, and the *Montcalm* was sent back to Quebec to get ready for her usual cruise down to Cabot straits to report ice and weather conditions to incoming steamers.

8 GEORGE V, A. 1918

The Department of Railways and Canals made the usual request to the department for the services of the *Lady Grey* to clear the ice accumulation at the foot of Soulanges canal, which was delaying the opening of navigation at this point. Orders were immediately given to have the *Lady Grey* get ready to proceed up as soon as the Lachine canal was opened to navigation. On April 25 the *Lady Grey* went through the Lachine canal early in the morning and reached the field of operations in a few hours. It was found that the jam was heavier than usual, so that it took the ice-breaker four days to clear the channel. April 30 she returned to Montreal and afterwards proceeded down to Quebec to get her machinery overhauled and hull repaired, after her strenuous winter work.

I am, sir, your obedient servant,

ALPHONSE LAFLECHE.

Acting Resident Engineer.

V. W. FORNERET, Esq. C.E.,
Superintending Engineer,
Department of Marine,
Ottawa.

GENERAL INFORMATION.

The cap-à-la-Roche semaphore, which shows the available depth of water in the dredged channel at cap-à-la-Roche, was put in operation May 12, 1916, and the St. Nicholas semaphore, which shows the depth available over the undredged St. Augustin bar, May 13, 1916.

During the season of 1916, fifteen dredges and attending plants were kept at work day and night, deepening and improving the ship channel. They removed a total amount of 7,793,805 cubic yards of material, varying from soft clay to very hard shale rock.

Good progress was made in the widening of the ship channel through St. Marys current, Montreal harbour, where it is proposed to widen it from 500 to 800 feet. The material dredged consisted of stone and gravel, and numerous boulders, which were lifted with a stone-lifter.

The widening of Longueuil curve at Forsyth shoal, from 500 to 850 feet, is nearly completed. There still remains some cleaning up to do. As soon as this is done, the curve will be buoyed out to give to vessels the full advantage of the increased width.

A commencement was made with the widening of Longue pointe curve. It is proposed to increase the present width of 500 feet to 650 and deepen it to 35 feet at E.L.W.

Considerable work was done deepening Varennes curve to 35 feet at E.L.W., which is nearing completion.

Very good progress was made with the deepening to 35 feet at E.L.W. in the cap St. Michel to Vercheres channel.

Work was commenced on the deepening of Vercheres traverse to 35 feet at E.L.W.

Two very powerful dredges were employed all season deepening Contrecoeur channel to 35 feet at E.L.W., and very good progress was made.

St. Ours traverse, at the lower end of this channel, was completed to 35 feet at E.L.W., as was also Lanoraie curve, which was widened to 800 feet. At the opening of the season of navigation of 1917 a rearrangement of buoys will be made to give the full advantage of the increased width to vessels.

The curve at the junction of Repentigny and île Lebel ranges, Repentigny steamboat channel, was widened to 700 feet, and the lower end of Repentigny traverse

SESSIONAL PAPER No. 21

was also widened from 300 to 450 feet and dredged to 15 feet at E.L.W. At the opening of the season of navigation of 1917, the buoys will be placed to give the full advantage of the increased width to tows, etc.

Considerable progress was made with the dredging of île de Grace channel and Ste. Anne traverse to 35 feet at E.L.W. This is nearing completion.

Good progress was also made with the 35-foot dredging in the channel at Stone island.

The powerful hydraulic dredge No. 7 was employed during part of the season on the île au Raisin channel, deepening it to 35 feet at E.L.W. and good progress was made, the work being nearly completed.

A start was made with the deepening of the channel at Port St. Francis, to 35 feet at E.L.W. One dredge being employed there during a good part of the season.

One dredge was employed for part of the season in cleaning up sand bars that had formed in Champlain channel. This is the only point where filling of any importance occurs in the ship channel, between Montreal and Quebec.

The dredging to 35 feet at E.L.W. of the ship channel through lake St. Peter is nearly completed. There remains less than a mile yet to be done, half of which is on île aux Raisins traverse, at the upper end of the channel, and half on Nicolet traverse, at the lower end of the lake.

Considerable work was done at cap-à-la-Roche curve during the past season, but owing to the very hard nature of the material to be removed, being solid rock, and the numerous boulders that had to be lifted with a stone-lifter, the progress was naturally slower than on other parts of the channel. Two powerful rock-dredges, one rock-cutter, two stone-lifters and attending plant were employed on this part of the channel during the season.

Cap Charles channel was completed to 30 feet at E.L.W. There still remain a few lumps and boulders, found with the testing scow, to be cleaned up.

WORK BELOW QUEBEC.

North Channel.—During the past season the two powerful sea-going hydraulic dredges Nos. 8 and 9 were employed removing material in this channel, and very good progress was made.

South Channel.—The Beaujeu channel was thoroughly tested, and a few sand bars were found to have formed. Dredge No. 9 was immediately placed to remove these, and this work was finished during the latter part of the season.

Steamboat Channel.—The new steamboat channel for light-draught vessels and tows through the islands opposite Sorel to lake St. Peter, by way of the Grand chenal, was completed to 15 feet at E.L.W. of 1897, and the three lighthouses to mark the different courses being finished, the channel was buoyed and opened to navigation. This channel is practically a continuation of the Repentigny steamboat channel.

With this addition, there will be a distance of over fifty miles between lake St. Peter and Montreal where tows and light-draught vessels can keep out of the ship channel.

Compensation Dams.—During the season of 1916, a large amount of dredging was deposited with dump scows on the site of Repentigny, chenal Corbeau, chenal des Barques and pointe du Lac Dams.

The dumps at chenal au Corbeau and chenal des Barques have been greatly increased in height, and not much additional dredged material can be deposited with dump scows, owing to the depth of water over the sites, even at the high water stage.

A considerable amount of dredged material can still be utilized at the sites of the Repentigny and pointe-du-Lac Dams.

Dredge No. 16.—The new sea-going hopper elevator dredge *No. 16* now under construction at Canadian Vickers Company, Limited, Montreal, for working below Quebec on the north channel, was successfully launched November 18, 1916. It is expected that this vessel which is one of the largest in the world of its type, will be ready to go into commission some time next season.

Sounding Steamer.—The new sounding steamer *Detector* was completed at the Government shipyard at Sorel, P.Q., and was placed in commission. She was built especially for sweeping the ship channel, and has all the necessary machinery and equipment on board, thereby doing away with the use of a scow. The *Detector* can therefore work in exposed places where a sounding scow could not be used. She proved very satisfactory and is the only vessel of its kind in existence.

The usual sweeping of the ship channel was done during the season and no obstruction of a serious nature was found. Some sand bars were found in Champlain channel, but these were removed before the low water season.

Lloyd's Agent at Quebec, Messrs. Henry Fry & Company, drew the attention of the department to the fact that during the past year not an accident to a sea-going vessel had occurred in the river St. Lawrence between Quebec and Father point, this, they attribute to the many improvements made by the Marine Department, by dredging and additional lighting of the river. It is the first time, according to their official records, which date back for sixty-two years, that this has occurred. During the past season also there was a most vigorous administration of the Pilotage Service by the department, which doubtless contributed to the freedom from accident emphasized by Messrs. H. Fry & Co.

The total cost, from 1851 to the end of the fiscal year, March 31, 1917, of the ship channel from Montreal to Father Point, including plant, shops, surveys, etc., is as follows:—

Dredging..	\$13,549,514 44
Plant, shops, surveys, etc..	7,970,857 02
Total..	\$21,520,371 46

The total number of cubic yards dredged, amounted to 113,790,397, the material varying from very hard shale rock to soft blue clay.

AVERAGE DEPTH FOR EACH MONTH IN THE (27½ FEET AT ORDINARY LOW WATER).
From Sorel Gauge during each year May to November.

Year.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Highest	Lowest.
	Ft. in.	Ft. in.	Ft. in.	Ft. in.	Ft. in.	Ft. in.	Ft. in.	Ft. in.	Ft. in.
1870	35 6	35 3	31 9	30 6	30 9	29 9	30 6	37 0	29 0
1871	34 6	31 3	29 9	29 9	30 0	28 3	28 3	36 9	27 3
1892.....	31 0	31 0	31 6	30 6	28 9	28 3	28 3	33 6	27 3
1893	36 0	34 3	30 9	29 9	29 6	28 6	28 0	37 6	27 6
1894.....	34 6	31 9	31 0	29 2	28 3	28 9	29 0	36 0	27 7
1895.....	33 3	31 3	28 3	28 3	27 6	26 9	26 9	34 6	25 10
1896.....	33 6	30 6	28 9	28 0	27 6	27 9	29 0	37 0	27 4
1897.....	35 6	32 6	30 3	29 3	28 0	27 0	27 6	37 0	26 5
1898.....	31 6	30 9	29 8	28 2	28 2	28 3	28 6	32 1	26 9
1899	36 2	31 9	30 3	28 6	27 6	28 0	27 9	37 9	26 9
1900	33 6	30 0	30 6	29 6	28 1	28 9	29 2	35 9	27 4
1901.....	34 3	31 10	29 2	28 3	27 7	27 4	27 3	36 3	26 6
1902.....	32 2	32 2	32 2	29 4	28 1	28 1	29 0	34 1	27 6
1903	33 0	30 11	30 5	29 5	28 4	29 0	27 11	32 8	26 11
1904.....	36 3	34 5	30 9	29 5	29 5	30 4	29 3	37 4	28 1
1905	31 10	30 8	29 7	29 0	28 0	28 5	28 1	33 6	27 1
1906	32 4	31 5	29 3	27 11	27 3	27 4	27 6	33 3	26 9

SESSIONAL PAPER No. 21

AVERAGE DEPTH FOR EACH MONTH IN THE 30 FOOT CHANNEL (30 FEET AT EXTREME LOW WATER OF 1897).

Year.	May	June.	July.	Aug.	Sept.	Oct.	Nov.	Highest	Lowest.
	Ft. in.	Ft. in.	Ft. in.	Ft. in.	Ft. in.	Ft. in.	Ft. in.	Ft. in.	Ft. in.
1907	37 1	35 9	34 3	32 10	32 4	32 9	33 7	38 3	31 10
1908	41 5	37 10	33 10	32 10	32 0	31 0	30 6	42 4	30 0
1909	40 6	37 6	33 10	33 2	32 7	32 4	31 6	42 7	30 11
1910	35 7	34 5	32 3	31 7	31 6	31 6	31 7	37 1	30 7
1911	36 6	34 6	32 1	31 3	30 9	30 2	30 3	38 1	29 4
1912	37 9	37 6	33 6	32 8	32 6	32 6	34 9	40 11	31 3
1913	37 0	34 4	32 8	31 10	31 6	32 1	32 7	38 6	31 1
1914	35 2	33 0	32 4	31 4	31 3	30 11	31 0	36 10	30 3
1915	34 7	32 6	31 6	31 4	31 1	30 11	30 8	37 4	30 1
1916.....	38 9	37 2	34 0	32 5	31 7	31 9	31 10	40 0	30 9

COST OF SHIP CHANNEL TO DATE, TABLE SHOWING THE TOTAL COST OF THE DREDGING AND PLANT AND THE QUANTITIES DREDGED TO MARCH 31, 1917.

	Cost of Dredging..	Expenditure for plant, shops, surveys, etc	Quantities Dredged.
	\$ cts.	\$ cts.	Cu. Yds.
MONTREAL HARBOUR COMMISSIONERS, 1851 TO 1888.			
Dredging Montreal to cap à la Roche to 27½ feet at O.L.W. and from cap à la Roche to Quebec to 27½ feet at half tide.....	3,402,494 35	534,809 65	19,865,693
DEPARTMENT OF PUBLIC WORKS.			
Dredging consisting of widening and cleaning up of channel, deepening cap à la Roche to cap Charles to 27½ feet at O.L.W. and dredging at Grondines, Lotbiniere and Ste. Croix, 1889 to June 30, 1899...	829,583 08	486,971 79	3,558,733
PROJECT OF 1899.			
Dredging channel between Montreal and Quebec to 30 feet at lowest water of 1897, also widening to a minimum width of 450 feet and straightening.....			
Fiscal Year, 1899-1900.....	100,191 01	265,270 78	1,107,894
" 1900-1901.....	136,680 83	287,040 04	2,479,385
" 1901-1902.....	185,429 80	479,731 47	3,098,350
" 1902-1903.....	255,776 55	277,703 50	6,544,605
" 1903-1904.....	276,958 59	308,765 44	4,619,260
DEPARTMENT OF MARINE AND FISHERIES. This includes the work below Quebec.			
Fiscal Year, 1904-1905.....	311,087 93	277,225 69	2,716,220
" 1905-1906.....	431,768 30	317,327 37	4,047,530
" 1906-1907..... (July 1, 1906 to March 31, 1907).	302,677 37	275,003 61	3,001,010
Fiscal Year, 1907-1908.....	478,209 66	417,390 22	4,831,875
" 1908-1909.....	497,686 03	340,861 86	5,896,737
" 1909-1910.....	572,950 71	321,375 80	6,354,285
" 1910-1911.....	576,838 02	488,248 88	5,600,050
" 1911-1912.....	588,697 60	499,799 58	4,509,904
" 1912-1913.....	663,229 74	430,107 86	6,929,344
" 1913-1914.....	895,235 59	426,018 12	6,140,867
" 1914-1915.....	1,036,846 65	327,975 71	6,225,143
" 1915-1916.....	976,622 03	771,760 03	8,462,957
" 1916-1917.....	1,030,550 60	437,469 62	7,800,555
	13,549,514 44	7,970,857 02	113,790,397

8 GEORGE V. A. 1918

DREDGING OPERATIONS.

Elevator Dredge No. 1 (Laval).—This is the oldest dredge of the River St. Lawrence Ship Channel fleet, the hull, which is wood, was constructed at Ottawa in 1894. It was then towed down to the shipyard at Sorel, P.Q., and the machinery installed. The dredge buckets are made of cast-steel for work in rock or other hard material.

During the season of 1915-16, the machinery, etc., of this dredge was given a thorough overhauling, and put into good shape for the next season's work.

The details of the operations for the fiscal year, beginning April 1, 1916, were as follows:—

Dredge No. 1 left Sorel on May 8, and was towed up to Montreal harbour. The following day she was laid out to work in the ship channel; deepening and widening in the St. Mary current opposite île Ronde. Having finished her cut July 20, No 1 was dropped back 1,000 feet to clean up some boulders found with the testing scow.

July 27, the dredge having finished cleaning up, was taken down to Sutherland pier, where there was still water, in order to enable a diver to make some necessary repairs.

July 31, No. 1 was again laid out to work at the foot of île Ronde to widen and deepen the ship channel at that point. The dredge continued working here until November 4, when No. 1 stopped work for the season, as instructions had been received from Ottawa to lay up the dredging fleet owing to the shortness of the coal supply. Dredge No. 1 was then towed down to Sorel to lay up for the winter.

In a total of 150 days, during which this dredge was at work, her machinery was in actual operation 71 per cent of the full working time. The total number of cubic yards dredged amounted to 56,607, consisting of gravel, stone and large boulders, at a cost of \$60,925.27, or \$1.07.63 per cubic yard.

Elevator Dredge No. 2 (Laurier).—The hull of this dredge is of wood, having been constructed at the Government shipyard at Sorel, P.Q., in 1897. She is equipped with a set of cast-steel buckets, especially designed for work in rock or other hard material.

During the winter of 1915-16, extensive repairs were made to the hull, and the machinery was given a thorough overhauling and put in good order for the next season's operations.

The details of the operations of this dredge for the fiscal year beginning April 1, 1916, were as follows:—

Owing to extensive repairs to her hull, the dredge only left Sorel, to commence her season's work, on June 5, and was laid out at the upper entrance to the new steamboat channel, through the Sorel islands (Grand chenal), to clean up some lumps found with the testing scow. No. 2 completed her work on June 21, and was towed down to work in cap Charles channel (cap à la Roche), to clean up stone and boulders, which had been found, when proving the channel with the testing scow. This required the frequent use of a stonelifter, which made it slow work.

Dredge No 2 finished cleaning up on August 3, and was moved up to cap à la Roche curve, where she worked on the south half of the channel, deepening and cleaning up, until 21st September. No. 2 was then moved over to work on the widening of the curve on the north side at the upper end of cap à la Roche curve. She continued working there until October 4, when the tug *Chambly* attending No. 2 collided with the dredge and sank alongside of it. Preparations were immediately made to raise the wreck, which was in about 30 feet of water, near the new north bank. The current being very swift at this point made salvage operations very difficult, and it was necessary to utilize the dredge for holding the salvage plant. The tug was successfully raised by the end of the month.

SESSIONAL PAPER No. 21

Dredge No. 2 left cap à la Roche for Vercheres, P.Q., on November 1, and was laid out to work at the lower end of Vercheres traverse, deepening the channel to 35 feet at extreme low water. No. 2 continued working here until November 13, when she was towed down to Sorel to go into winter quarters.

In a total of 112 days, during which this dredge was at work, her machinery was in active operation 53 per cent of the full working time.

The total number of cubic yards removed amounted to 40,116, at a cost of \$57,146.23, or \$1.42.45 per cubic yard.

Elevator Dredge No. 3 (Aberdeen).—The hull of this dredge is of steel, the complete vessel having been constructed at the Government shipyard at Sorel, Que., in 1900. The buckets are of cast-steel for work in rock or other hard material.

During the winter of 1915-16 the machinery was given a thorough overhauling and the necessary repairs made to the hull, to put the dredge in good shape for the next season's operations. The details of the operations of this dredge for the fiscal year beginning April 1, 1916, were as follows:—

Dredge No. 3 left Sorel May 12 and was towed up to pointe aux Trembles (en-haut) and laid out there to deepen the channel to 35 feet at extreme low water of 1897. No. 3 continued working at different parts of pointe aux Trembles channel until August 14, when the dredge was towed down to the foot of lake St. Peter and laid out to work at the lower end of Nicolet traverse, widening and deepening the channel to 35 feet at E.L.W. The dredge worked here until October 25, when she was moved up the river, as she lost too much time by wind owing to her exposed position on lake St. Peter at this time of the year. Dredge No. 3 was laid out to work in the channel at pointe aux Trembles and continued working in this locality until November 15, when, owing to difficulty of obtaining coal for the fleet, she was taken down to Sorel to go into winter quarters.

In a total of 155 days during which this dredge was at work, her machinery was in active operation 65 per cent of the full working time.

The total number of cubic yards removed amounted to 218,325 at a cost of \$56,183.84 or 25.73 cents per cubic yard.

Elevator Dredge No. 4 (Minto).—This dredge is of the same type and design as No. 3 and was constructed at the Sorel shipyard in 1900. No. 4 is also provided with cast-steel buckets for dredging in rock or other hard material.

During the winter of 1915-16 dredge No. 4 was given a good general overhauling and the machinery put into good condition for the next season.

The details of the operations of this dredge for the fiscal year beginning April 1, 1916, were as follows:—

Dredge No. 4 left Sorel on May 11, and was taken down and laid out to work deepening the channel to 35 feet, at extreme low water, opposite Stone island.

The dredge continued working here until August 10, and was then towed down to the foot of lake St. Peter and laid out to work deepening the channel to 35 feet at E.L.W. at Force shoal, Port St. Francis.

On October 24, No. 4 was taken back to work in the channel opposite Stone island, where the dredge was more sheltered from bad weather at this time of the season. Dredge No. 4 continued working here until November 11, when she was taken to Sorel to be laid up for the winter.

During the season of 1916, out of a possible number of 156 days, the dredge was in actual operation 62 per cent of that time. The total number of cubic yards removed amounted to 261,702 at a cost of \$61,521.02, or 23.51 cents per cubic yard.

Elevator Dredge No. 5 (Lafontaine).—This dredge was also constructed at the government shipyard at Sorel, P.Q., and was completed in 1901. The hull is of wood. She is fitted out with cast-steel buckets for working in rock or other hard material.

8 GEORGE V, A. 1918

During the winter of 1915-16 the hull and machinery were given a thorough overhauling and put in good order for the next season's operations.

The details of the operations of this dredge for the fiscal year beginning April 1, 1916, were as follows:—

Dredge No. 5 left Sorel for Varennes, P.Q., May 1, and was laid out to work on the curve, dredging to 35 feet at E.L.W. of 1897. No. 5 continued working there until June 7, and was then towed down to cap à la Roche and laid out to work on the curve to 20 feet at E.L.W., and continued working there until November 7. The dredge was then towed up to Varennes and laid out where she left off in the spring. November 10, No. 5 stopped work for the season and was taken down to Sorel to go into winter quarters.

In a total of 161 days, during which this dredge was at work, her machinery was in active operation 42 per cent of the full working time. The total number of cubic yards removed amounted to 133,025, at a cost of \$68,557.27, or 51.53 cents per cubic yard.

Elevator Dredge No. 6 (Baldwin).—This dredge was constructed at the Sorel government shipyard in 1902, the hull being of wood. No. 6 is provided with large built-up buckets for working in soft material, but with sufficient teeth to enable the dredge to work in hard clay, etc.

During the winter of 1915-16 this dredge was thoroughly overhauled, and put in good condition for the next season's work. The details of the operations of this dredge for the fiscal year beginning April 1, 1916, were as follows:—

Dredge No. 6 left Sorel to commence her season's work on May 4, and was towed up to Repentigny and laid out to widen the curve at the junction between Repentigny and Lebel tangents (Repentigny Steamboat channel) also to widen the channel at the foot of Repentigny traverse from 300 to 450 feet; the depth dredged at both places was 15 feet at E.L.W. in 1897. No. 6 finished at Repentigny on June 21, and was taken up and laid out to work to widen the channel at Longueuil shoal on the south side, dredging to 30 feet at E.L.W. June 11, the upper tumbler shaft broke and the dredge had to be taken down to Sorel for repairs. The repairs being completed on July 18, No. 6 was towed down to Champlain and was laid out to clean up sand bars found in Champlain channel by the testing steamer. She continued working at different points in this channel until November 16 and was taken up to Sorel on the 17th to go into winter quarters.

In a total of 161 days, during which No. 6 was at work, her machinery was in actual operation 49 per cent of the full working time. The total number of cubic yards excavated amounted to 195,285 at a cost of \$57,969.06 or 29⁶/₁₀₀ cents per cubic yard.

Hydraulic Dredge No. 7 (J. Israel Tarte).—The hull of this dredge is of steel of the same type and general design as the steel hulls of elevator dredges Nos. 3 and 4. She was constructed in 1902 by the Polson Iron Works Company, of Toronto, Canada.

No. 7 is held in position for dredging by six anchors, one forward, one aft, and two on each side. The dredged material is discharged through a pipe 36 inches in diameter, floated on steel pontoons. This discharge pipe is connected with the dredge by a swivel elbow. The scow is equipped with a steam boiler and winch for the purpose of changing the position of the end of the pipe line by means of these anchors. The discharge pipe, which is made up of 100-foot lengths, is about 2,500 feet long and the material is deposited about 1,800 feet from the edge of the channel. After many years of careful observation, it has been found that none of the dredged material has been carried back into the channel.

The material is first attacked by a revolving cutter at the end of the suction pipe, which is driven by an independent engine. It not only cuts the material, but starts it towards the inlet, and, although the suction pipe is 80 feet long, heavy material, small

SESSIONAL PAPER No. 21

stones and occasionally buoy anchors, etc., are sucked up. The steam for the machinery is supplied by four marine boilers.

During the winter of 1915-16 the dredge was given a good overhauling and the necessary repairs were made to her machinery. The details of the operations of this dredge for the fiscal year beginning April 1, 1916, were as follows:—

Dredge No. 7 left Sorel May 23 and was taken down to lake St. Peter, and laid out to work on île aux Raisin traverse, to deepen the channel to 35 feet at E.L.W., of 1897. On August 1, No. 7 finished on île aux Raisin traverse, and continued to work up on île aux Raisins course, the material being clay and stones the same as on the traverse.

The dredge continued working there until the discharge pipe could not be worked satisfactorily, owing to limited area. No. 7 was then towed up to work at the head of Ste. Anne traverse, deepening the channel to 35 feet at E.L.W., the material being clay and stones. Dredge No. 7 continued working here until November 10, when she was taken to Sorel to be laid up for the winter.

In a total of 145 days, during which this dredge was at work, her machinery was in actual operation 60 per cent of the full working time. The total number of cubic yards removed amounted to 2,068,645, at a cost of \$118,382.41, or 5.72 cents per cubic yard.

Hydraulic Hopper Dredge No. 8 (Beaujeu)—Steel hull, twin screw. Dredge No. 8 was constructed at the Government shipyard at Sorel, Que., in 1907.

During the winter of 1915-16 the dredge was given a thorough overhauling and put in good working order for the next season's operations.

No. 8 left Sorel May 1, 1916, for the East narrows, north channel, below Quebec, she stopped at Three Rivers on her way for coal. Left Three Rivers May 3, reaching her destination at the foot of the island of Orleans the same day, where she commenced operations immediately. June 20 No. 8 came up to Quebec to be beached at Levis for repairs to the tail and shaft; it was found necessary after examination that she had to go into drydock next day, coming out again on the 29th. June 30 the dredge returned to East narrows to continue operations. August 5 No. 8 came up again to Quebec to have the cutter-head blades renewed; this work was completed on the 8th, and the dredge returned to her work.

The dredge continued working until September 1, when she broke the turbine shaft, which made it necessary for No. 8 to come up to Quebec to be placed on the gridiron at Lewis; she came off next day. Urgent repairs, necessitated the dredge being sent to Sorel. No. 8 left Quebec for Sorel September 4, reaching there on the 5th. The repairs being completed on September 17, No. 8 left Sorel for East narrows, below Quebec, reaching there the same day.

The turbine shaft broke again on November 3. No. 8 went up to Quebec for repairs, returning to her work on the 8th, where she worked until November 13, when she stopped operations for the season. The numerous breakages were caused by the numerous stones and boulders. The dredge came up to Quebec and tied up at Allan's wharf and remained until it was decided whether she would be placed in drydock at Levis or Montreal. It was found that there was not sufficient room at the Levis drydock to allow No. 8 to winter there, owing to the numerous vessels to be wintered, but that No. 9 (*Galveston*) could be taken in, being a smaller vessel. Dredge No. 8 then left Quebec November 16, reaching Sorel the next day.

No. 8 lay at Sorel to the end of the week and then went up to Montreal to go into the floating drydock, Canadian Vickers, Ltd., for the winter. Owing to several vessels that had to be docked first, it was several days before the dredge was placed in the floating dock.

During the season No. 8 worked 145 days and her machinery was in actual operation 85 per cent of the full working time.

8 GEORGE V, A. 1918

The total number of cubic yards removed amounted to 1,347,600 at a cost of \$89,442.47, or 6.64 cents per cubic yard.

Suction Hopper Dredge No. 9 (Galveston), steel hull, twin screw.—During the winter of 1915-16 No. 9 was given a thorough overhauling and her machinery put in good order for the next season's work.

The details of the operations of this dredge for the fiscal year commencing April 1, 1916, were as follows:

The dredge left Sorel on May 9, 1916, for St. Michel de Bellechase, where she arrived that night. Next morning she was beached alongside the wharf to open up her suction pipe outlet. Some additional work was done to her machinery during her stay at St. Michel. On May 12, her repairs being completed, No. 9 left St. Michel and went down to East narrows, north channel, to commence operations, where she continued to work until July 14, when she left for Quebec, to go on the "hard" at Levis to get her hoppers repaired. This work was completed on the 22nd, and then No. 9 returned to East narrows and continued working there until October 3, when the dredge was sent over to work in Beaujeu channel, on the south side, to clean up sand bars found by the sounding steamer. No. 9 finished dredging at Beaujeu channel, for the season, November 11, and went up to St. Michel to be beached and have her suction-pipe outlet closed. She came off on the 13th and proceeded up to Quebec, where she remained until it was decided to winter her in the Levis drydock, where she laid up at the beginning of December.

During the season dredge No. 9 worked 150 days, and her machinery was in actual operation 74 per cent of the full working time. The material consisted mostly of sand, with some clay and gravel and numerous stones.

The total number of cubic yards removed by No. 9 during the season amounted to 498,700, at a total cost of \$65,837.03, or 13.20 cents per cubic yard.

Dipper Dredge No. 10. This dredge was constructed at the government shipyard at Sorel, P.Q., and completed in 1910. The hull is of steel. During the winter of 1915-16 the dredge was given a general overhauling and put in good condition for the next season's work. The details of the operations of No. 10 for the fiscal year beginning April 1, 1916, were as follows:—

Owing to extensive repairs that had to be made, the dredge was late in commencing operations for the season. No. 10 was ready for work June 6, and began cleaning up in front of coal dock at the shipyard, deepening to 22 feet at E.L.W. This was completed on the 16th. No. 10 was then towed up to Longue Pointe, June 19, and laid out to widen the curve on the south side, at the upper end of the second chord, deepening to 35 feet at E.L.W. of 1897. During the season a great deal of time was lost owing to repairs and the difficulty of obtaining sufficient firemen.

Dredge No. 10 continued to work on Longue Pointe curve until October 12, when she was towed up to the floating dock basin, Canadian Vickers, Limited, where she had to do some cleaning up of material that had silted in. No. 10 lost a great deal of time when working in the basin by the docking of ships and trials of submarines, as she had to move out of the way. She finished her work on the 24th, and returned to Longue Pointe curve, where the dredge worked until November 10, when operations were stopped for the season. The dredge was ready to be towed down on the 15th, and was then taken to Sorel to go into winter quarters.

During the season of 1916, dredge No. 10 worked 128 days, her machinery being in operation 54 per cent of that time. The total amount of cubic yards removed amounted to 240,850, at a total cost of \$58,594.95, or 24.33 cents per cubic yard.

Dipper Dredge No. 11.—This dredge was constructed at the Government shipyard at Sorel, Que., and completed in 1911. The hull is of steel. The dredge can work to a depth of 52 feet.

SESSIONAL PAPER No. 21

During the winter of 1915-16 the dredge was given a general overhauling and her machinery put in good order for the next season's work.

The details of the operations of this dredge for the fiscal year beginning April 1, 1916, were as follows:—

Dredge *No. 11* being ready for work, she left Sorel for Montreal on May 25 and was laid out on Longueuil curve to widen the channel to 800 feet, working on the north side, and deepening to 30 feet at E.L.W. of 1897. This dredge also lost a great deal of time during the season on account of repairs and difficulty of obtaining sufficient firemen. *No. 11* finished her cuts on the north side of the channel November 6, and was then moved over to work on the south side, where she continued until November 10, when the dredge stopped operations for the season. She was taken down to Sorel on the 15th and laid up for the winter.

During the season of 1916, *No. 11* worked 138 days, and during this time her machinery was in operation 50 per cent of her actual working time. The total number of cubic yards removed amounted to 239,150, at a total cost of \$73,396.57, or 30.69 cents per cubic yard.

Elevator Dredge No. 12.—This dredge was constructed at the Government shipyard at Sorel, Que., and was completed in 1912. Her hull is of steel. *No. 12* is fitted out with large cast-steel buckets for working in rock or other hard material and can dredge to a depth of 52 feet. The breasting winches are similar to those on dredge *No. 5*, using wire cables instead of chains. During the winter of 1915-16 *No. 12* was given a thorough overhauling, to hull and machinery, and put in good order for the next season's work.

The details of the operations of this dredge for the fiscal year beginning April 1, 1916, were as follows:—

Dredge *No. 12* left Sorel, May 1, and was towed up to Lanoraie and laid out to widen the curve at the foot of St. Ours course (Contrecoeur channel), deepening to 35 feet at extreme low water of 1897. Having finished her cut June 16, she was then taken up and laid out at the foot of Bellmouth curve, to work on the north half, to a depth of 35 feet at E.L.W. She finished the cut at Bellmouth curve September 18 and commenced at foot of "Petite traverse" (Contrecoeur channel), working on the north half to 35 feet at E.L.W. *No. 12* continued working on this course until November 10, when orders were given to stop operations for the season. Utilized crew of dredge to assist in raising a dumping scow belonging to the dredge which had sunk on October 20. The scow having been successfully raised on the 16th, the dredge was taken down to Sorel to be laid up for the winter.

During the season of 1916 *No. 12* worked 164 days, during which her machinery was in operation 58 per cent of the full working time. The total number of cubic yards dredged amounted to 549,375, at a total cost of \$66,006.80, or 12.02 cents per cubic yard.

Elevator Dredge No. 13.—This dredge was constructed at the government shipyard at Sorel, P.Q., and completed in 1913. Her hull is of steel. *No. 13* is fitted with large cast-steel buckets, for rock and other hard material, and can dredge to a depth of 52 feet. The breasting winches are similar to those on elevator dredge *No. 5*, using wire cables instead of chains.

Dredge *No. 13* was given a good overhauling during the winter of 1915-16 and put in first-class order for the next season's work. The details of the operations of this dredge for the fiscal year beginning April 1, 1916, were as follows:—

May 6, dredge *No. 13* left Sorel and was towed down to the foot of île de Grâce channel and laid out on the north side to deepen the channel to 35 feet at E.L.W. Finished cut on the north side July 14, and was then dropped back to work on the south half of the channel. *No. 13* continued working here until November 6, and was then taken up to Sorel to go into winter quarters.

8 GEORGE V, A. 1918

The number of days dredge *No. 13* worked during the season was 128, and was in actual operation 72 per cent of the full working time.

The total number of cubic yards removed amounted to 535,500, at a cost of \$68,455.49, or 12⁷/₁₀₀ cents per cubic yard.

Self-propelling elevator dredge No. 14, steel hull, single screw.—This dredge was constructed by the Collingwood Shipbuilding Company and completed in 1914. *No. 14* is equipped with large built-up steel buckets of one cubic-yard capacity.

During the winter of 1915-16 *No. 14* was given a thorough overhauling and put in good order for next season's work.

The details of the operations of this dredge for the fiscal year beginning April 1, 1916, were as follows:—

Dredge *No. 14* left Sorel May 5, steamed up to Verchères and was laid out to work in the channel a short distance above pointe Marie on the north side, dredging to 35 feet at E.L.W. Finished cut June 22, and was then moved back and placed on the south side at the foot of cap st. Michel to Verchères channel. *No. 14* completed her cut on the south side July 22.

Dredge *No. 14* then went down to Contrecoeur traverse, and was laid out to work at the lower end on the north half, dredging to 35 feet at E.L.W. Continued here until August 21, when *No. 14* had to leave her work and go down to Sorel for necessary repairs to the lower tumbler. September 9, the repairs being completed, *No. 14* left Sorel for Contrecoeur traverse and resumed her work where she had left off. September 18, *No. 14* had to go to Sorel again for repairs to her lower tumbler shaft. Returned to Contrecoeur traverse next day. Finished Contrecoeur curve, north half, November 1, and continued on the Verchères to Contrecoeur channel. November 10, orders were received to lay up the dredge for the winter. She left that day for Sorel to go into winter quarters.

During the season of 1916, *No. 14* worked 143 days, and her machinery was in actual operation 71 per cent of the working time.

The number of cubic yards removed amounted to 654,925, at a cost of \$65,693.83, or 10⁰/₁₀₀ cents per cubic yard.

Self-propelling elevator dredge No. 15, steel hull, single screw.—This dredge was constructed by the Collingwood Shipbuilding Company, and completed in 1914. *No. 15* is equipped with built-up steel buckets of 1 cubic yard capacity. During the winter of 1915-16 the dredge was given a good general overhauling, and put in good order for the next season's operations.

The details of the operations of this dredge for the fiscal year beginning April 1, 1916, were as follows:—

No. 15 left Sorel May 3, and steamed up to Verchères, where she was laid out to work on the cap St. Michel to Verchères channel, on the south half, dredging to 35 feet at E.L.W. of 1897. Finished cut July 29, was moved ahead about two miles and laid out to work on the north side of the channel. September 14, it was found necessary to send the dredge down to Sorel for repairs to the lower tumbler. The repairs being finished September 26, *No. 15* left Sorel for cap St. Michel, to resume her work where she had left off. The dredge continued working in this channel until November 10, when orders were received to lay up the dredge for the season. *No. 15* then picked up her moorings and left for Sorel and went into winter quarters.

This dredge worked 146 days during the season of 1916. Her machinery was in operation 54 per cent of her full working time. The number of cubic yards removed amounted to 760,750, at a cost of \$62,438.36, or 8.21 cents per cubic yard.

The total number of cubic yards removed by the dredging fleet in the ship channel between Montreal and Quebec during the fiscal year ending March 31, 1917, amounted to 5,954,255, at a total cost of \$875,271.10, or 14.70 cents per cubic yard.

SESSIONAL PAPER No. 21

The total number of cubic yards removed by dredges Nos. 8 and 9, in the ship channel below Quebec, during the fiscal year ending March 31, 1917, amounted to 1,846,300, at a total cost of \$155,279.50, or 8.41 cents per cubic yard.

The total number of cubic yards removed by the whole of the dredging fleet, during the fiscal year ending March 31, 1917, amounted to 7,800,555, at a total cost of \$1,030,550.60, or 13.21 cents per cubic yard.

PROGRESS of Dredging Operations at date of writing, the close of the Season 1916,
30-foot project.

Locality.	Distance English miles.	Total length requiring dredging.	Length dredged in 1916.	Total length of 30-foot channel dredged.	Length yet to be dredged.
		Miles.	Miles.	Miles.	Miles.
Division 1— Montreal to Sorel	45	22.90		22.90	All completed.
Division 2— Sorel to Batiscan	36	12.45		12.45	All completed.
Division 3— Lake St. Peter.	20	18.00		* 0.50 †17.50	
Division 4— Batiscan to Quebec.....	59	10.00	0.04	8.15	1.85
Division 5— Quebec to the Traverse	60	6.65		4.65	2.00
Total.....	220	70.00	0.04	66.15	3.85

*Not widened.

†Widened.

8 GEORGE V, A. 1918

Progress of Dredging Operations at date of writing, the close of the Season 1916.
30-foot project.

Locality	LENGTH OF DREDGING.		Cubic Yards yet required to be done.
	Required.	Done.	
	Miles.	Miles.	
Division 1—			
Longue Pointe		1.10	
Longue Pointe to Pointe aux Trembles (1-11)		5.05	
La St. Therese		0.40	
Verdieres to Cap St. Michel		3.00	
Cap St. Michel to Verdieres		1.50	
Verdieres traverse		1.10	
Verdieres to Cap Breton		1.70	
Cap Breton channel		6.05	
Total		22.90	
Division 2—			
Saint-John-de-Cap		4.40	
Saint-John		1.10	
Pointe aux Trembles		0.25	
Lake St. Peter (See Div. 3).			
Point St. Thomas		0.50	
Point Rivers		0.50	
Cap Melville to Beauport		1.55	
Beauport to Cap Melville		2.25	
Cap Melville to Pointe aux Trembles		1.30	
Pointe aux Trembles		0.60	
Total		12.45	
Division 3—			
Lake St. Peter		* 0.50	200,000
		† 17.50	
Total		18.00	200,000
Division 4—			
Pointe aux Trembles	0.65	1.60	
Cap St. Thomas (See Div. 2)		1.35	275,000
Point Rivers		1.20	
Cap Melville		0.90	
Point St. Thomas		0.80	
Point Rivers		0.40	
Cap Melville		0.20	
Total	0.60	0.30	200,000
Total	0.60		200,000
Total	1.85	8.15	1,075,000
Division 5—			
Pointe aux Trembles	1.00	4.45	550,000
Total	1.00	4.65	550,000
Totals. . . .	4.5	41.1	1,825,000

SESSIONAL PAPER No. 21

PROGRESS of Dredging Operations at date of writing, the close of the Season 1916.
35-foot project.

Locality.	Distance English miles.	Total length requiring dredging.	Length dredged in 1916.	Total length of 35-foot channel dredged.	Length yet to be dredged.
		Miles.	Miles.	Miles.	Miles.
Division 1— Montreal to Sorel.....	45	28·63	3·84	13·48	15·15
Division 2— Sorel to Batiscan	36	19·75	3·13	5·55	14·20
Division 3— Lake St. Peter.....	20	18·32	1·27	17·03	1·29
Division 4— Batiscan to Quebec	59	15·54			15·54
Division 5— Quebec to Goose cape (North chan- nel)	66	8·14		0·75	7·39
Total.....	226	90·38	8·24	36·81	53·57

8 GEORGE V, A. 1918

PROGRESS of Dredging Operations at date of writing, the, close of the Season 1916.
35-foot project.

Locality.	LENGTH OF DREDGING IN MILES.		Cubic yards yet to be dredged.	Cubic yards dredged.
	Yet to be done.	Done.		
Division I—				
Entrance Channel	1.88		721,454	
Entrance Port Channel	0.39	0.08	443,592	51,550
Entrance Port Curve	1.27	0.05	999,781	234,100
Port to French Channel	1.05	2.89	656,127	1,132,500
Port to French Channel	1.12		146,611	
Verde Channel	0.27	1.61	712,816	2,177,790
Cap St. Michel Curve	0.56		500,500	
Cap St. Michel to Ver Vires	1.82	2.90	485,333	1,568,250
Ver Vires Travers	1.19	0.05	306,114	4,550
Ver Vires to Centre Port	1.66	0.25	1,183,000	187,425
Centre Port Channel	2.05	5.65	2,194,532	3,418,343
Centre Port to Sand	0.61		159,215	
Total, Division I	15.15	13.48	8,509,075	8,774,508
Division II—				
Sand to de la Grce	1.55	3.43	1,296,506	2,413,554
Staple Channel	1.42	0.00	468,870	412,390
Du Lac River	0.20	1.10	202,125	777,224
Port St. Francis.....	0.67	0.33	491,303	248,275
Three Rivers	0.72		533,192	
Cap Michel to Boncourt	2.40		1,348,578	
Boncourt to Champagne	1.16		932,750	
Champagne to Port Curville	4.06		2,632,356	
Port Curville	1.23		684,600	
Total, Division II	14.20	5.55	8,590,280	3,851,443
Division III—				
Lake St. Pierre	1.29	17.03	1,161,570	11,335,582
Division IV—				
Entrance to Lake St. Pierre	4.48		2,386,168	
Cap Lake St. Pierre	1.27		781,066	
Cap Lake St. Pierre	2.06		1,836,859	
Cap Lake St. Pierre	2.04		1,077,416	
Cap Lake St. Pierre	0.83		513,332	
Cap Lake St. Pierre	0.47		321,480	
Cap Lake St. Pierre	1.51		655,561	
Cap Lake St. Pierre	1.47		708,518	
Cap Lake St. Pierre	1.41		826,707	
Total, Division IV	15.51		9,197,207	
Division V—				
Channel to Cap Lake St. Pierre (North channel)	1.81		2,585,132	
Madison Road along	1.75	0.75	2,594,873	10,973,168
West Channel East Northern Road				
Total, Division V	7.08	0.75	5,180,005	10,973,168
Total	50.22	26.81	32,638,137	34,934,701

SESSIONAL PAPER No. 21

RIVER ST. LAWRENCE SHIP CHANNEL DREDGING FLEET.

The following is a description of the dredging plant at the end of the season 1916, owned and operated by the Department of Marine in connection with the River St. Lawrence Ship Channel, between Montreal and Father Point:—

DREDGES.

The Elevator Dredge "Laval" (No. 1), wooden hull—Length over all, 150 feet; breadth of beam, 30 feet; depth of hold, 14 feet; average draught, 11 feet; greatest working depth, 42 feet; hull built in Ottawa in 1894; steel buckets; working capacity per day in hard material, 1,000 to 2,000 cubic yards.

The Elevator Dredge "Laurier" (No. 2), wooden hull—Length over all, 163 feet; breadth of beam, 32 feet; depth of hold, 14 feet; average draught, 10 feet; greatest working depth, 45 feet; built at Sorel shipyard in 1897; steel buckets; working capacity per day in hard material, 1,000 to 2,000 cubic yards.

The Elevator Dredge "Lady Aberdeen" (No. 3), steel hull—Length over all, 148 feet; breadth of beam, 32 feet; depth of hold, 13 feet; average draught, 8.5 feet; greatest working depth, 42.5 feet; built at Sorel shipyard in 1900; steel buckets; greatest working capacity per day in hard material, 1,000 to 2,000 cubic yards.

Elevator Dredge "Lady Minto" (No. 4), steel hull—Length over all, 148 feet; breadth of beam, 32 feet; depth of hold, 13 feet; average draught, 8.5 feet; greatest working depth, 42.5 feet; built at Sorel shipyard in 1900; steel buckets; working capacity per day in hard material, 1,000 to 2,000 cubic yards.

Elevator Dredge "Lafontaine" (No. 5), wooden hull—Length over all, 168 feet; breadth of beam, 32 feet; depth of hold, 14 feet; average draught, 9 feet; greatest working depth, 45 feet; built at Sorel shipyard in 1901; steel buckets; working capacity per day in hard material, 1,000 to 2,000 cubic yards.

Elevator Dredge "Baldwin" (No. 6), wooden hull—Length over all, 165 feet; breadth of beam, 34 feet; depth of hold, 14 feet; average draught, 8 feet; greatest working depth, 40 feet; built at Sorel shipyard in 1902; one-cubic-yard buckets strengthened for fairly hard material; working capacity per day in medium material, 2,500 to 3,500 cubic yards.

Hydraulic Dredge "J. Israel Tarte" (No. 7), steel hull—Length over all, 160 feet; breadth of beam, 42 feet; depth of hold, 12.5 feet; average draught, 6 feet; length of suction pipe, 80 feet; greatest working depth, 47 feet; built at Polson Ironworks, Toronto, 1902; working capacity per day in soft material, 12,000 to 20,000 cubic yards.

Discharge pipe and pontoons of Dredge "J. I. Tarte" (No. 7)—Twenty-seven lengths of pipe, 36 inches diameter, by 100 feet long, one length of pipe, 36 inches diameter by 35 feet long; twenty-seven pairs of pontoons for floating pipes, 42 inches diameter by 90 feet long.

Pontoon Anchor Scow for Dredge "No. 7."—Wooden hull; length over all 74 feet 7 inches; breadth of beam (outside plank), 27 feet 6 inches; depth at side 7 feet; built at Sorel shipyard 1909.

Winch Scow for Dredge "J. I. Tarte" (No. 7)—Wooden hull; length over all, 60 feet 8 inches; breadth of beam (outside plank), 21 feet; depth at side, 7 feet 6 inches; built at Sorel shipyard 1902.

8 GEORGE V, A. 1918

The Sea-going Suction Hopper Dredge "Beaujeu" (No. 8).—Steel hull; twin screw; length between perpendiculars, 264 feet; breadth of beam, 45 feet; depth of hold, 20 feet; capacity of hoppers, 2,000 cubic yards in 45 minutes; greatest working depth, 65 feet; draught when loaded, 15 feet; ordinary speed, 9 statute miles; built at Sorel shipyard in 1907.

The Suction Hopper Dredge "Galveston" (No. 9).—Steel hull; twin screw; length over all, 233 feet; breadth of beam, 39 feet; depth of hold, 15.5 feet; draught, when loaded with 1,800 tons, 14 feet 9 inches aft, and 13 feet 1 inch forward; greatest working depth, 55 feet; built in Germany, 1904; two suction pumps, Dutch type, 8.5 feet outside diameter, working capacity, 1,350 cubic yards in 45 minutes; hopper capacity, 1,500 cubic yards.

Dipper Dredge "No. 10".—Steel hull; length moulded, 132.5 feet; breadth moulded, 42 feet; depth at bow, 11.5 feet; depth at stern, 9.7 feet; length of spuds, 74 feet; bucket capacity one 11-yard for soft material, one 9-yard for hard material, capable of dredging to 50 feet; built at Sorel shipyard in 1910.

The Dipper Dredge "No. 11".—Steel hull; length moulded, 132.5 feet; breadth moulded, 42 feet; depth at bow, 11.8 feet; depth at stern, 13.5 feet; length of spuds, 74 feet; bucket capacity one 11-yard for soft material, one 9-yard for hard material, capable of dredging to 50 feet; built at Sorel shipyard in 1911.

The Elevator Dredge "No. 12," steel hull.—Length over all, 180 feet; breadth of beam, 40 feet; depth of hold, 12.8 feet; average draught, 9 feet; greatest working depth, 52 feet; built at Sorel shipyard in 1912; steel buckets; working capacity per day in hard material 2,000 to 4,000 cubic yards.

The Elevator Dredge "No. 13," steel hull.—Length over all 180 feet; breadth of beam, 40 feet; depth of hold, 12.8 feet; average draught, 9 feet; greatest working depth, 52 feet; built at Sorel shipyard in 1913; steel buckets; working capacity per day in hard material 2,000 to 4,000 cubic yards.

Self-propelling Elevator Dredge "No. 14."—Steel hull, single screw; length between perpendiculars, 215 feet, 0 inches; breadth moulded, 37 feet 5 inches; depth moulded, 14 feet, 0 inches; mean draught, 9 feet 8 inches; speed 8 knots; greatest working depth, 55 feet; built by the Collingwood Shipbuilding Company in 1914; steel buckets, one cubic yard capacity; Manganese steel lip; working capacity per hour in clay, 800 cubic yards; Lloyd's 100 A.I. dredger class.

Self-propelling Elevator Dredge "No. 15."—Steel hull, single screw; length between perpendiculars, 215 feet, 0 inches; breadth moulded, 37 feet, 5 inches; depth moulded, 14 feet, 0 inches; mean draught, 9 feet, 8 inches; speed, 8 knots; greatest working depth, 55 feet; built by the Collingwood Shipbuilding Company in 1914; steel buckets one cubic yard capacity; Manganese steel lip; working capacity per hour in clay, 800 cubic yards; Lloyd's 100 A.I. dredger class.

ROCK CUTTER.

Rock Cutter No. 1, steel hull.—Length over all, 100 feet; breadth of beam, 36 feet; depth of hold, 9.3 feet; weight of ram, 25 tons; hull and machinery built by the Lobnitz Company, Renfrew, Scotland, and re-erected at Sorel shipyard in 1912.

STONE LIFTERS.

Stone Lifter No. 3, wooden hull.—Length over all, 108 feet; breadth of beam, 34 feet; depth of hold, 14 feet; built at Sorel shipyard in 1903.

Stone Lifter No. 4, steel hull.—Length over all 100 feet; breadth of beam, 32 feet; depth of hold, 12 feet; built at Sorel shipyard in 1910.

SESSIONAL PAPER No. 21

Stone Lifter No. 5, steel hull.—Length over all, 100 feet; breadth moulded, 36 feet; depth of hold, 8 feet, 7 inches; depth moulded, 9 feet, 10 inches; lifting capacity, 60 tons; built at Sorel shipyard in 1914.

FLOATING SHOP.

Floating Shop—Wooden hull.—Length over all 91 feet; breadth of beam 27 feet 7 inches; depth at side 7 feet; 1 forge; 1 scraper; 1 emery wheel; 1 drill; 1 lathe; 1 6-horse-power Foss gasolene engine; living quarters for four men; built at Sorel shipyard in 1908.

SELF-PROPELLING HOPPER BARGES.

The Self-propelling Hopper Barge No. 1.—Steel hull; single screw; length between perpendiculars 180 feet; breadth moulded 32 feet; depth moulded 14 feet 6 inches; draught (loaded) 12 feet; depth of rubbing keel 5 inches; total draught 12 feet 5 inches; deadweight on above draught 785 tons; indicated horse-power 500; net capacity of hopper 530 cubic yards; built by Messrs. Geo. T. Davie & Sons, Levis, Que., in 1913.

The Self-propelling Hopper Barge No. 2.—Steel hull, single screw; length between perpendiculars 180 feet; breadth moulded 32 feet; depth moulded 14 feet 6 inches; draught (loaded) 12 feet 7 inches; depth of rubbing keel 5 inches; total draught 13 feet; deadweight on above draught 800 tons; indicated horse-power 700; net capacity of hopper 530 cubic yards; built by Collingwood Shipbuilding Company, Collingwood, Ont., in 1915.

TUGS.

The Ice-breaking and emergency Tug "Lady Grey."—Steel hull, twin screw; length between perpendiculars, 172 feet; length over all 183 feet 6 inches; breadth moulded 32 feet; breadth extreme 32 feet 3 inches; depth moulded 18 feet; draught mean to bottom of flat-plate keel (normal) 12 feet; draught when ice-breaking about 13 feet; displacement in tons at 12 feet draught 1,070; mean speed, at 12 feet draught on 6 runs over measured mile base 14 knots; built by Vickers Sons & Maxim Ltd., Barrow-in-Furness, England, 1906.

The Tug "Bellechasse" steel hull, twin screw.—Length between perpendiculars 130 feet; breadth moulded 27 feet; draught aft 10 feet 3 inches; draught forward 8 feet 9 inches; indicated horse-power 1,000; built by the Kingston Shipbuilding Company, Kingston, Ont., in 1913.

The Tug "Berthier" steel hull, twin screw.—Length over all 128 feet; breadth of beam 24 feet; depth of hold 12 feet 6 inches; average draught 10 feet; built at Sorel shipyard in 1916.

The Tug "Frontenac" composite hull, twin screw.—Length over all 113 feet; breadth of beam 23 feet; depth of hold 10 feet; average draught 9 feet; built at Sorel shipyard in 1902.

The Tug "De Leris", wooden hull, twin screw.—Length over all, 104 feet; breadth of beam 20 feet; depth of hold 10 feet; average draught 8 feet; built at Sorel shipyard in 1902.

The Tug "James Howden", Wooden hull, twin screw.—Length over all, 100 feet; breadth of beam, 21 feet; depth of hold, 10 feet; average draught, 7.5 feet; built at Sorel shipyard in 1903.

8 GEORGE V, A. 1918

The Tug "Iberville", steel hull, single screw.—Length over all, 90 feet; breadth of beam, 18 feet; depth of hold, 12 feet; average draught, 10 feet; built at Sorel shipyard in 1897.

The Tug "Lac St. Pierre", wooden hull, twin screw.—Length over all, 100 feet; breadth of beam, 21 feet; depth of hold, 10 feet; average draught, 7.6 feet; built at Sorel shipyard in 1901.

The Tug "Portneuf", wooden hull, single screw.—Length over all, 85 feet; breadth of beam, 17.3 feet; depth of hold, 9.8 feet; average draught, 8 feet; built at Sorel shipyard in 1905.

The Tug "Chambly", wooden hull, single screw.—Length over all, 84 feet; breadth of beam, 18 feet; depth of hold, 9.5 feet; average draught, 9 feet; built at Sorel shipyard in 1893.

The Tug "Emilia", wooden hull, single screw.—Length over all, 84 feet; breadth of beam, 17 feet; depth of hold, 9 feet; average draught, 8 feet; built at Sorel shipyard in 1898.

The Tug "Lanoraie", wooden hull, single screw.—Length over all, 84 feet; breadth of beam, 17 feet; depth of hold, 9 feet; average draught, 8 feet; built at Sorel shipyard in 1901.

The Tug "Jessie Hume", wooden hull, single screw.—Length over all, 72 feet; breadth of beam, 17.2 feet; depth of hold, 10 feet; average draught, 8.5 feet; built at St. Catharines, Ont., in 1876.

The Tug "Lotbinière", wooden hull, twin screw.—Length over all, 80 feet; breadth of beam, 23 feet; depth of hold, 8 feet; average draught, 7 feet; built at Sorel shipyard in 1903.

The Tug "Carmelia", wooden hull, single screw.—Length over all, 84 feet; breadth of beam, 17 feet; depth of hold, 9 feet; average draught, 8 feet; purchased in 1904.

The Tug "Contrecoeur", wooden hull, twin screw.—Length over all, 90 feet; breadth of beam, 22.7 feet; depth of hold, 9 feet; average draught, 7 feet; built at Sorel shipyard in 1910.

The Tug "Varennnes", wooden hull twin screw.—Length over all, 96 feet; breadth of beam, 22 feet; depth of hold, 9 feet; average draught, 7 feet; built at Sorel shipyard in 1911.

The Tug "Laviolette", steel hull, twin screw.—Length over all, 92 feet; breadth of beam, 22 feet; depth of hold, 9.3 feet; average draught, 7 feet; built at Sorel shipyard in 1912.

The Tug "Lavaltrie", steel hull, twin screw.—Length over all, 92 feet; breadth moulded 22 feet; depth moulded, 10 feet; average draught, 6 feet 6 inches; built at Sorel shipyard in 1913.

The Tug "Beaucour", steel hull, twin screw.—Length over all, 100 feet; breadth moulded, 22 feet 6 inches; depth moulded, 10 feet; depth of hold, 9 feet; average draught, 7 feet; capacity of fire pumps, 1,200 gallons (U.S.) per minute; built at Sorel shipyard in 1914.

The Tug "Deschailions", steel hull, twin screw. Length over all, 100 feet; breadth moulded, 22 feet 6 inches; depth moulded, 10 feet; depth of hold, 9 feet; average draught, 7 feet; capacity of fire pumps, 1,200 gallons (U.S.) per minute; built at Sorel shipyard in 1914.

SESSIONAL PAPER No. 21

SOUNDING STEAMER.

Sounding Steamer "Detector," steel hull, twin screw.—Length over all, 140 feet; breadth of beam, 35 feet; depth of hold, 15 feet; average draught, 10 feet; testing bar, 40 feet in width; built at Sorel shipyard in 1916.

COAL BARGES.

Coal Barge No. 1, wooden hull.—Length over all, 120 feet; breadth of beam, 24 feet; depth of hold, 10 feet; capacity, 360 tons; built at Sorel shipyard in 1898.

Coal Barge "No. 2".—Wooden hull; length over all 125 feet; breadth of beam, 25 feet; depth of hold, 11 feet; capacity, 400 tons; built at Sorel shipyard in 1900.

Coal Barge "No. 3".—Wooden hull; length over all, 98 feet; breadth of beam, 28 feet; depth of hold, 12 feet, capacity, 370 tons; built at Sorel shipyard in 1902.

Coal Barge "No. 4".—Wooden hull; length over all, 98 feet; breadth of beam, 28 feet; depth of hold, 12 feet; capacity, 360 tons; built at Sorel shipyard in 1903.

Coal Barge "No. 5".—Steel hull; length over all, 127 feet; breadth of beam, 32 feet; depth of hold, 10 feet; capacity, 545 tons; built at Sorel shipyard in 1911.

Self-propelling Coal Barge "No. 6".—Steel hull; single screw; length over all, 172 feet; breadth moulded, 32 feet; depth moulded, 13 feet; average draught, 10 feet; capacity, 700 tons; fitted with a Brown hoist steam crane and clam of 54 cubic feet capacity; built at Sorel shipyard in 1916.

SOUNDING SCOWS.

Sounding Scow "No. 1".—Wooden hull; length over all, 64 feet; breadth of beam (outside plank, 26 feet 6 inches; depth at side, 6 feet; built at Sorel shipyard in 1896.

Sounding Scow "No. 2".—Wooden hull; length over all, 95 feet 6 inches; breadth of beam (outside plank), 37 feet 9 inches; depth at side, 4 feet 6 inches. Transferred from Prescott agency in 1907, remodeled and improved in Sorel shipyard.

Sounding Scow "No. 3".—Wooden hull; length over all, 77 feet 6 inches; breadth of beam (outside plank), 33 feet 8 inches; depth at side, 7 feet; built at Sorel shipyard in 1913.

WINCH SCOWS.

"No. 1"—Winch scow used for fleet in general.—Length over all, 61 feet 6 inches; breadth of beam (outside plank), 18 feet 8 inches; depth at side, 6 feet; built at Sorel shipyard in 1908.

"No. 2"—Winch scow used for fleet in general.—Length over all, 57 feet 8 inches, breadth of beam (outside plank), 18 feet 6 inches; depth at side, 5 feet; built at Sorel shipyard in 1908.

DERRICK SCOW.

Derrick scow used at Sorel Shipyard in connection with construction and repairs to dredging fleet.—Length over all, 61 feet 6 inches; breadth of beam (outside plank), 28 feet 10 inches; depth at side, 6 feet 6 inches, equipped with a derrick of 5 tons lifting capacity.

8 GEORGE V, A. 1918

HOPPER DUMPING SCOWS WITH HYDRAULIC POWER FOR CLOSING GATES.

No. 1, wooden hull, with hydraulic power for closing gates.—Length over all, 84 feet, 6 inches; breadth of beam, (outside plank), 20 feet, 8 inches; depth at side, 8 feet, 6 inches; capacity, 150 cubic yards; built at Sorel shipyard in 1897.

No. 2, wooden hull, with hydraulic power for closing gates.—Length over all, 84 feet, 0 inches; breadth of beam (outside plank), 21 feet, 0 inches; depth at side, 8 feet, 6 inches; capacity, 150 cubic yards; built at Sorel shipyard in 1897.

No. 3, wooden hull, with hydraulic power for closing gates.—Length over all, 91 feet, 6 inches; breadth of beam (outside plank), 23 feet, 10 inches; depth at side, 8 feet, 6 inches; capacity, 200 cubic yards; built at Sorel shipyard in 1898.

No. 4, wooden hull, with hydraulic power for closing gates.—Length over all, 95 feet, 0 inches; breadth of beam (outside plank), 25 feet, 0 inches; depth at side, 9 feet, 6 inches; capacity, 200 cubic yards; built at Sorel shipyard in 1898.

Nos. 5 & 6, wooden hulls, with hydraulic power for closing gates.—Length over all, 98 feet, 0 inches; breadth of beam (outside plank), 25 feet, 6 inches; depth at side, 9 feet, 6 inches; capacity, 200 cubic yards; built at Sorel shipyard in 1899.

HOPPER DUMPING SCOWS WITH HYDRAULIC POWER FOR CLOSING GATES.

No. 7, wooden hull, with hydraulic power for closing gates.—Length over all, 99 feet, 0 inches; breadth of beam (outside plank), 25 feet, 6 inches; depth at side, 9 feet, 6 inches; capacity, 200 cubic yards; built at Sorel shipyard in 1901.

No. 8, wooden hull, with hydraulic power for closing gates.—Length over all, 98 feet, 0 inches; breadth of beam (outside plank), 25 feet, 6 inches; depth at side, 9 feet, 6 inches; capacity, 200 cubic yards; built at Sorel shipyard in 1901.

No. 9, wooden hull, with hydraulic power for closing gates.—Length over all, 101 feet, 0 inches; breadth of beam (outside plank), 27 feet, 0 inches; depth at side, 9 feet, 6 inches; capacity, 300 cubic yards; built at Sorel shipyard 1901.

Nos. 10 & 11, wooden hulls, with hydraulic power for closing gates.—Length over all, 93 feet, 0 inches; breadth of beam (outside plank), 27 feet, 6 inches; depth at side, 8 feet, 6 inches; capacity, 250 cubic yards; built at Sorel shipyard 1913.

Nos. 12 & 13, wooden hulls, with hydraulic power for closing gates.—Length over all, 100 feet, 0 inches; breadth of beam (outside plank), 27 feet, 0 inches; depth at side, 10 feet, 6 inches; capacity, 300 cubic yards; built at Sorel shipyard 1902.

No. 14.—Wooden hull, with hydraulic power for closing gates.—Length over all, 92 feet 8 inches; breadth of beam (outside plank), 25 feet; depth at side, 8 feet 6 inches; capacity, 200 cubic yards; built at Sorel shipyard 1905.

No. 15.—Wooden hull, with hydraulic power for closing gates.—Length over all, 93 feet; breadth of beam (outside plank), 25 feet; depth at side, 9 feet; capacity, 200 cubic yards; built at Sorel shipyard 1905.

No. 16.—Wooden hull, with hydraulic power for closing gates.—Length over all, 93 feet 6 inches; breadth of beam (outside plank), 25 feet; depth at side, 8 feet 6 inches; capacity, 200 cubic yards; built at Sorel shipyard 1909.

No. 17.—Wooden hull, with hydraulic power for closing gates.—Length over all, 94 feet 6 inches; breadth of beam (outside plank), 25 feet 6 inches; depth at side, 8 feet 6 inches; capacity, 200 cubic yards; built at Sorel shipyard 1909.

SESSIONAL PAPER No. 21

Nos. 18 and 19.—Wooden hulls, with hydraulic power for closing gates.—Length over all, 93 feet; breadth of beam (outside plank), 27 feet 6 inches; depth at side, 8 feet 6 inches; capacity, 250 cubic yards; built at Sorel shipyard 1911.

No. 20.—Wooden hull, with hydraulic power for closing gates.—Length over all, 93 feet 6 inches; breadth of beam (outside plank), 27 feet 6 inches; depth at side, 8 feet 6 inches; capacity, 250 cubic yards; built at Sorel shipyard 1912.

No. 21.—Wooden hull, with hydraulic power for closing gates.—Length over all, 93 feet 9 inches; breadth of beam (outside plank), 27 feet 9 inches; depth at side, 8 feet 6 inches; capacity, 250 cubic yards; built at Sorel shipyard 1912.

No. 22.—Steel hull, hydraulic power, fitted with valves instead of gates for carrying sand.—Length over all, 108 feet; breadth of beam (moulded), 21 feet; depth at side, 12 feet; capacity, 200 cubic yards; built at Sorel shipyard 1912.

Nos. 23 and 24.—Steel hulls, with hydraulic power for closing gates.—Length over all, 100 feet; breadth of beam (moulded), 29 feet; depth at side, 10 feet 3 inches; capacity, 250 cubic yards; built at Sorel shipyard 1915 and 1916.

Nos. 25 and 26.—Steel hulls, with hydraulic power for closing gates.—Length over all, 100 feet; breadth of beam (moulded), 29 feet; depth at side, 9 feet 3 inches; capacity, 235 cubic yards; built at Sorel shipyard 1913.

Nos. 27, 28, 29 and 30.—Steel hulls, with hydraulic power for closing gates.—Length over all, 140 feet; breadth of beam (moulded), 30 feet; depth at side, 11 feet 9 inches; capacity, 450 cubic yards; built at Sorel shipyard, 1914.

Nos. 31 and 32.—Steel hulls, with hydraulic power for closing gates.—Length over all, 100 feet; breadth of beam (moulded), 29 feet; depth at side, 10 feet 3 inches; capacity, 250 cubic yards; built at Sorel shipyard, 1915.

Nos. 33 and 34.—Steel hulls, with hydraulic power for closing gates.—Length over all, 100 feet; breadth of beam (moulded), 29 feet; depth at side, 10 feet 3 inches; capacity, 250 cubic yards; built at Sorel shipyard in 1916.

FLAT SCOWS.

Flat Scow No. 1, wooden hull.—Length over all, 99 feet; breadth of beam (outside plank), 27 feet; depth at side, 10 feet 8 inches; built at Sorel shipyard, 1901.

Flat Scow No. 2, wooden hull.—Length over all, 100 feet; breadth of beam (outside plank), 27 feet; depth at side, 10 feet 10 inches; built at Sorel shipyard, 1902.

Flat Scow No. 3, wooden hull.—Length over all, 62 feet; breadth of beam (outside plank), 18 feet 8 inches; depth at side, 6 feet 6 inches; built at Sorel shipyard, 1908.

SUMMARY.

Dredges	15
Rock Cutters	1
Stone Lifters	3
Floating Shop	1
Hopper Barges (Self-propelling)	2
Tugs	21
Sounding Steamer	1
Coal Barges	6
Sounding Scows	3
Winch Scows	3
Derrick Scows	1
Anchor Scows	1
Dumping Scows	34
Flat Scows	3

 95

8 GEORGE V, A. 1918

APPENDIX No. 4.

SOREL SHIPYARD.

SOREL, 28th May, 1917.

The Deputy Minister of Marine,
Ottawa, Ont.

SIR,—I have the honour to submit the following annual report of work done at Sorel shipyard during the fiscal year ending 31st March, 1917:—

At the commencement of the fiscal year, 1st April, 1916, the winter repairs and renewals of the St. Lawrence Ship Channel fleet were practically completed and the outfitting in progress, also the engaging of the crews for the new season's work.

The Richelieu river was clear of ice on April 10, 1916, and the St. Lawrence river at Sorel on 23rd April, 1916.

The first dredge of the fleet left Sorel to go into commission on the 7th May, 1917.

During last season's working, the vessels were all maintained in a good and serviceable condition and the necessary operating repairs carried out without undue detention to the working of the fleet.

REPAIRS TO DOMINION STEAMERS.

C.G.S. *Lady Grey*.—This vessel is employed in winter as an ice-breaker and the repairs are done during fall.

The principal repairs were as follows during the season:—

To gunwales, to railing in the after part of the boat.

The forward part of main deck was doubled with rough board, and there was a general overhauling of deck equipment.

Engine: Repairs to machinery, fan engine was overhauled, controlling shaft of the steering gear overhauled along the top of the boilers.

The main engine and circulating pump, the producing valves, dynamo engines, motors and electric wiring had a general overhauling. The steam pipes were put in good order. O'Neil's system of forced draft piping was renewed.

Boilers: Tubes in two after boilers renewed. Front plates of the fires overhauled and put in good order.

Dampers in force draft chimneys repaired. Girders in the four boilers were well tightened. Necessary pipe covering was done. Inner smokestack was renewed. Water circulators installed in the four boilers, 48 pieces in number.

C.G.S. *Dollard*.—This vessel operates below Quebec and had repairs made there.

The only repairs done here during summer were as follows: The boiler had a few stay bolts caulked and the bridge wells renewed; 4 only handles for flue scraper were made and 21 wooden fenders 9 inches by 3 feet were also supplied.

C.G.S. *Frontenac*.—Summer repairs (hull): Had ordinary repairs to hull and

Winter (hull): Repairs to deck, bulwarks, gunwales, coamings, fenders; seven new frames put in in way of bunker; alteration to stern tow posts; electric bells overhauled; boats made in accordance with new Act, and the vessel thoroughly cleaned and painted as usual.

SESSIONAL PAPER No. 21

Engine repairs: Rocking shaft brasses of both engines were adjusted. The pony pump had general repairs. One new piston made and notions repaired. The valve rods were also repaired.

Boiler: Repairs to bottom of smoke box.

C.G.S. *Bellechasse*: This vessel, working below Quebec had only a few pieces of machinery supplied by the shipyard and shipped by the Canada Steamship Lines during summer.

Winter repairs were done at Quebec, the vessel being under steam early this spring. Electricians were sent from the shipyard to overhaul the electric system on board.

REPAIRS TO VESSELS OF PUBLIC WORKS DEPARTMENT.

C.G.S. *Speedy*.—Winter repairs: To deck houses, doors, windows, etc.

Floor and guard plates were renewed where necessary.

Some caulking was done to decks. Rail and boat davit repaired. Repairs to rudder and chain arrangement. The vessel was painted all over.

Engine repairs: Condenser stop ferrule fitted to aft box. New plug for main ash back. Sirens and main whistle overhauled. The electric system was overhauled. One complete ash ejector made. Fitting up of engines and auxiliaries, overhauling of piping.

Boiler: Necessary welding and caulking done to boiler, also chipping, cleaning and painting inside of boiler.

Tug *Storm King*.—Winter repairs (hull): This vessel was hauled out on the ways on November 20 and had hull caulked, tested all over and recaulked where necessary. Doors and windows overhauled and repaired where necessary. Housings on top deck were lengthened by about 6½ feet to make accommodation for capstan and provided with berth, doors and windows. The fresh-water tank on upper deck was renewed. Ventilators were repaired and waste pipe renewed, the steering-gear engine overhauled; one spar sprocket-chain supplied and cable of steering apparatus on main deck renewed.

The electric-apparatus engine, dynamo, wiring, and main engine were thoroughly overhauled and all machinery put in good condition. Accommodation for cook on starboard side was renewed, bed seating increased; connection under valve-plug for oil or steam, entirely of modern type. Lignum vitæ renewed and a coat of paint applied all over as usual.

Boiler: The stays in the bottom of the combustion chamber at the back plate were welded, side seams of bottom plate caulked and 40 additional stay-bolts fitted.

Tug *Witherbee*.—Winter repairs: Was hauled out on November 28, 1916, for wintering.

Hull: Bulwark railing was put in good order and repairs made to rudder and to life boats.

Engine: Stern bearing was examined and lignum vitæ renewed, shaft and propeller repaired and adjusted.

The steering gear, bilge and feed pumps, air and condensing pumps, condenser, thrust-block of main engine were examined and all necessary repairs made or parts renewed and put in good condition.

Boiler: Caulking spots all around at the intersections of the two plates, removing the brickwork for chipping and caulking, and welding butts. Also repairs to the yoke plates near the bunker. The back circumferential seam examined and caulked and the cross spout welded.

Tug *Ottawa*.—During summer, this tug had repairs to her engine, and her stern bearing and shaft lined up.

8 GEORGE V, A. 1918

REPAIRS TO VESSELS OF CONSTRUCTION OF LIGHTS DEPARTMENT.

All kinds of repairs were made for this department and all necessary equipment was supplied for the construction of lights and maintenance of buoys, such as cleats, bolts, chisels, fairleads, deck plugs, buoy forgings, rings, rods and repairs to buoys, etc. Also repairs to electric wiring of their shops on Sorel wharf, preparation of timber, etc.

C.S. Acetylene.—During the summer this vessel had no repairs made here; only 2 cleats 9 inches long were supplied by the shipyard.

Winter repairs: Light repairs to main deck. Canvas was renewed on boat and upper decks. Small repairs to rail and covering board. Whistle pipe was renewed and also boiler smoke pipe was renewed. The vessel was painted inside and outside.

C.G.S. Verchères: Was hauled out on July 28, 1916 for repairs to rudder and shoe, had repairs done to stem and sheathing of hull and caulking of butt seams. The hull was painted under water-line. The shaft was taken ashore to be examined and new propeller fitted.

In the first part of December, this boat sank in lake St. Peter, having her hull damaged by ice. She was lifted by Construction of Lights officials and brought to Sorel and hauled out on December 9. Necessary repairs were made to the hull which was painted under water line.

Apart from the above repairs, she had only ordinary operating repairs during summer. The boiler was kept in good condition during the summer.

Winter repairs: Repairs were made to rail, bulwark, covering board, decks, windows, doors, deck-houses, fenders, guard; and new plate, and new door supplied for forecastle companionways, door casing and boarding renewed, one gangway for passengers and one for freight made. Bulwark panels aft were renewed, and new grating placed over steering gear etc.

Vessel was painted inside and outside.

Engine repairs: Brass on crank shaft was refitted, 3 collars on thrust-block bab-bitted, piston and electric system overhauled.

Boiler repairs: During winter a new boiler was made and installed on board. Opening in the hull was made to remove the old boiler and install the new one. All connections were remade and replaced where necessary, and new boiler seats, stokehold flooring, new uptakes, boiler grate, etc., were supplied.

C.G.S. Réserve: This vessel was hauled out on December 4, 1916, for repairs to hull which was damaged by ice, and caulked, steel sheathing repaired, also planking, tail shaft and stern bush.

During the summer repairs were made to the deck and to pony-pump plungers and one new smoke-box bottom supplied.

Winter repairs (hull): The deck was caulked, few pieces renewed on deck, small hatch about 12-inch by 15 inch made in main deck aft. Repairs to the upper canvas on deck, one hand tiller was made for rudder; scupper pipes renewed, W.C's. and bath were put in good condition, three windows repaired and three overhauled. Repairs to bulwark made, renewal of wire rope for rudder and also of sheaves and painting on side and aft accommodation completed.

Engine repairs: Brass for crank-pin, rings to piston, 4 springs for valve repairs and pony pump, pins, and new crank provided, inspirator and stop valve on steam pipe repaired.

Boiler repairs: Rivet head of crown sheet was repaired and doubling plates at fire door renewed, smoke box doors put in good order, and feed pipes renewed; exhaust pipe was repaired and new plates in bunkers.

SESSIONAL PAPER No. 21

C.G.S. *Shamrock*.—Summer repairs were made to boiler and injector, a new bowl was purchased for W.C. and one boiler plate furnace supplied. Repairs made to one plate on hull.

Winter repairs: This vessel was hauled out for winter on December 18, 1916, for heavy repairs to the hull and renewing stern frame, etc., etc., paint was applied all over as usual.

Engine repairs: Link brass was renewed, link pins turned and links straightened, guides planed, new piston rings for horse-power spring on L.P. valve. New bolts for engine foundation. Stern bearing repaired and bushed, shaft overhauled. Foundation of engine and of thrust-block was remade, repairs made to thrust-block, general overhauling of piping, new whistle-valve. Provided shaft in bearing, lined winch repaired, pins made for links. Keys, pinion, drum and piston-rings were put in good condition and steering gear, windlass, etc., repaired.

The joints on boiler were caulked, grate and other parts overhauled.

Launch *Margot*.—During the winter the hull was put in good order and the engine had a good general overhauling.

C.G.S. *Maggie May*.—Summer: During the season, 12 fenders and two 25-foot steam hose were supplied by the shipyard.

BUOY SERVICE.

This department was supplied with fittings and material such as scrap for concrete, anchors, rods, shackles, sling chains, etc. Repairs to winter buoys were also made.

ST. LAWRENCE SHIP CANAL INVESTIGATION.

A good deal of work was done, such as making and repairing gauge boards, iron posts and caps and timber. Also necessary repairs to yacht *Yinkin*, and catamarans, etc. Also work for automatic water gauges, gauge houses, etc.

NEW CONSTRUCTION.

No. 57.—This vessel named *Detector*, is a twin screw steel steamer of the following dimensions, specially designed and fitted for sounding purposes in the St. Lawrence Ship Channel: Length B.P., 140 feet 0 inches; length O.A., 147 feet 0 inches; breadth moulded, 35 feet 0 inches; depth moulded, 15 feet 0 inches; draught loaded, 10 feet 0 inches; gross tonnage, 607 06/100; net tonnage, 209 47/100; indicated H.P., 532; speed, 12 miles.

The vessel, which was tried under steam in November, 1915, and was completed for commission and went on service early in the spring, from all reports, has given satisfactory service.

No. 59.—This vessel named *Berthier* is a twin screw steel tug of the following dimensions, for staff purposes on the St. Lawrence Ship Channel Service below Quebec: Length B.P., 120 feet 0 inches; length O.A., 128 feet 0 inches breadth moulded, 24 feet 0 inches; depth moulded, 12 feet 6 inches; draught mean, 9 feet 0 inches; gross tonnage, 368 35/100; net tonnage, 85 34/100; I.H.P., 550; speed, 13½ miles.

Good accommodation has been arranged for four officials and for the officers and crew. The vessel was launched on August 28, 1916, and completed sufficiently for a trial which took place on December 2, 1916, when a mean speed of 12½ miles with 490 I.H.P. was obtained. It is hoped to obtain a better result in the spring as the coal used on trial was not good. The necessary work to put the vessel in commission which was not done, owing to approach of winter, will be completed in May, 1917.

8 GEORGE V, A. 1918

No. 60.—This vessel named *Argenteuil* is a single screw steel steamer for buoy service on the Ottawa river and is of the following dimensions: breadth moulded, 21 feet 0 inches; depth moulded, 9 feet 0 inches; draught loaded, 5 feet 6 inches.

The vessel is sheathed on bottom of bilges with elm, as a protection against boulders in shallow waters, where she will sometimes work.

The machinery consists of one set of compound jet-condensing engines 10 inches and 20 inches diameter cylinders by 14-inch stroke, supplied by Messrs. John Inglis & Co., Toronto, one Scotch marine boiler 9 feet 6 inches diameter by 10 feet 0 inches long having a working pressure of 130 pounds per square inch. Machinery and boiler were installed on board on the ways and everything was ready for launching in the late fall but it was considered advisable to keep her on the ways for the winter, complete all the work and launch as soon as possible in the spring. The vessel will be ready for service by the 10th of June, 1917.

No. 62.—This vessel named the *Ostrea* is a composite single screw steamer of the following dimensions, for the Department of Naval Service for use in the oyster fisheries: Length, B.P., 77 feet 0 inches; length, O.A., 85 feet 0 inches; breadth moulded, 18 feet 0 inches; depth, 7 feet 0 inches; draught, 4 feet 9 inches; gross tonnage, 110, 77/100; net tonnage, 33 12/100; I.H.P., 120; speed, 9 miles.

The vessel is fitted with one set of compound surface condensing engines having cylinders 10-inch and 20-inch diameter by 12-inch stroke, supplied by Messrs. John Inglis & Co., Toronto, and a Scotch marine boiler 8 feet 6 inches diameter by 9 feet 0 inches, with a working pressure of 120 pounds per square inch.

The vessel was launched July 27, 1916, and went on preliminary trial August 26, and the official trial September 14, when a mean speed of 9 miles, 120 I.H.P., was obtained.

The vessel was put in commission and left for Charlottetown on September 19.

No. 63.—This vessel named *Coal Barge No. 6* is a single screw steel coal barge of the following dimensions, for use in the St. Lawrence Ship Channel Service: Length, B.P., 165 feet 0 inches; length, O.A., 172 feet 0 inches; breadth moulded, 13 feet 0 inches; draught loaded, 10 feet 8½ inches; deadweight, 750 tons; gross tonnage, 611 93/100; net tonnage, 340 42/100; indicated H.P., 600; speed, 12 miles.

She was completed in the spring of 1916, made several trips to Montreal for coal for the shipyard and went into her service at Quebec in the early part of June, worked very satisfactorily all the season and assisted in lifting the buoys for the winter in lake St. Peter, giving very great satisfaction in this work.

No. 67.—This vessel is a steel dumping scow of the following dimensions: Length, O.A., 100 feet 0 inches; breadth moulded, 29 feet 0 inches; depth moulded, 10 feet 3 inches; capacity, 250 cubic yards.

Hydraulic machinery for operating the hopper doors is fitted.

This vessel was launched July 15, 1916.

No. 68.—This vessel named *Thurlow*, of the following dimensions, is a wooden launch fitted with a single screw gasoline engine, for the Department of Naval Service for use at the fish hatcheries at Belleville: Length, 45 feet 0 inches; breadth, 10 feet 0 inches; depth, 4 feet 11 inches; draught, 2 feet 7½ inches; speed, 9½ miles.

This launch was ordered August 11, 1916, tried on October 12, and proceeded same day for Belleville.

The engine is a 6-cylinder "Buffalo," of 45 H.P.

Nos. 69-70-71.—These vessels of the following dimensions, are three single screw steel trawlers, known as constructions A.B.C. and are being built to the order of the director of ship construction: Length B.P. 125 feet 0 inches; length, O.A., 134 feet 6 inches; breadth moulded, 23 feet 6 inches; depth, 13 feet 6 inches.

SESSIONAL PAPER No. 21

As much progress as possible with our stock material was made pending the arrival of the steel ordered for the vessels.

The engines which are of the triple expansion type, having cylinders 12 $\frac{3}{4}$ -inch by 21 $\frac{1}{2}$ -inch by 35-inch diameters by 24-inch stroke, are being built in the shipyard as are also the boilers which are 13 feet 6 inches diameter by 10 feet 6 inches. Working pressure, 180 pounds per square inch.

These vessels have to be finished by October 31.

Nos. 71-72-73.—These vessels of the following dimensions, are three single screw drifters known as constructions D.E.F., and are being built to the order of the director of ship construction: length, B.P., 84 feet 0 inches; length, O.A., 93 feet 0 inches; breadth moulded, 18 feet 3 inches; depth moulded, 10 feet 11 $\frac{1}{2}$ inches

As much progress as possible with our stock material was made pending the arrival of the lumber from British Columbia.

The engines, which are of the compound type having cylinders 12-inch and 24-inch by 16-inch stroke, will be supplied to us, but the boilers which are 9 feet 6 inches diameter by 9 feet 0 inches long, 140 pounds working pressure, will be made in the shipyard.

These vessels have to be finished by October 31.

The question of lifeboats on the tugs was taken up with the Board of Steamboat Inspection and an outfit of boats for each was approved, as many as possible of the existing boats were used, and for new boats a standard boat was designed and approved. It is hoped that all these boats will be finished and fitted up early in the summer of 1917.

The question of life-boats on the dredges is now being taken up.

The buoy department has been fairly busy repairing 25 winter buoys for the channel, and making several of the larger buoys. Nine were shipped to various points and we have nine on hand.

GENERAL.

The shipyard launch *Bronx* was maintained in good order and painted.

A new launch named *Leros* was built to replace the *Buffalo*. The same engine was installed on the new launch.

All the fences were kept in good order and whitewashed during the season.

The shipyard ways and wharves were repaired and kept in good condition.

The forces employed during the fiscal year varied from 364 in October to 911 in April, and averaged 715 men daily.

The financial statement shows the total amount expended at the shipyard and ship channel to have been \$1,084,769.81.

I have the honour to be, sir,

Yours faithfully,

W. S. JACKSON,

Superintendent of Shipyard.

A. Johnston, Esq.,
Deputy Minister
Marine and Fisheries,
Ottawa.

" Department of Railways and Canals...	6 22
" Montreal District Agency...	6,922 15
" Chief Engineer's Branch of Marine and Fisheries	13,866 01
" C.C.S. "Acetylene"	1,020 98
" " "Bellechasse"	6,267 61
" " "Bradbury"	1,112 21
" " "Dollard"	3,749 16
" " "Frontenac"	12,576 26
" " "Lady Grey"	14,462 37
" " "Maggie May"	103 95
" " "Montcalm"	463 49
" " "Reserve"	4,430 33
" " "Shamrock"	9,762 41
" " "Vercheres"	6,515 32
" Prescott Agency	60,465 01
" Parry Sound Agency	42 84
" Quebec Agency	18 15
" St. John Agency	62 37
" Quebec Harbour Commissioners	421 44
" Department of Signal Service	215 53
" Hydrographic Survey	195 88
" Steamer "Richard W"	2 00
" " "Wm Edwards"	23 34
" " "Sallasia"	196 86
" Construction of Steam Trawlers and Drifters	15 68
" Beauchemin & Fils Ltd.	98 02
" Beauchemin & Cie	11 63
" Canada Steamship Lines Ltd.	15 68
" Canadian Vickers Ltd.	269 48
" La Cie Electrique de Sorel	266 70
" F. D. Caron	2 45
" J. O. Fagnan	47 57
" Leclaire & Fils	1 90
" J. L. B. Leclaire	21 74
" Munition & Machinery Ltd.	134 81
" Quebec, Montreal & Southern Ry. Co	243 61
" The Sincennes, McNaughton Lines Ltd.	8 93
" Hopital General de Sorel	132 64
" Sorel Mechanical Shops Ltd.	2 68
" Sorel Snow-Shoe Club	179 55
" Sorel Shipbuilding & Coal Co. Ltd	49 60
	184 22

W. S. JACKSON,
Superintendent of Shipyards.

\$ 1,405,473 09

" C.C.S. "Acetylene"	1,020 98
" " "Bellechasse"	6,251 63
" " "Bradbury"	1,296 50
" " "Dollard"	3,749 16
" " "Frontenac"	12,576 26
" " "Lady Grey"	12,068 68
" " "Maggie May"	103 95
" " "Reserve"	4,430 33
" " "Shamrock"	9,762 41
" " "Vercheres"	6,515 32
" Quebec Harbour Commissioners	57,775 22
" Parry Sound Agency	215 34
" St. John Agency	18 15
" Department of Signal Service	168 25
" Steamer "Richard W"	195 88
" " "Wm. Edwards"	23 34
" " "Sallasia"	196 86
" Beauchemin & Fils Ltd	15 68
" Beauchemin & Cie	11 63
" Canada Steamship Lines Ltd	15 68
" Canadian Vickers Ltd	269 48
" La Cie Electrique de Sorel	266 70
" F. D. Caron	2 45
" J. O. Fagnan	47 57
" Leclaire & Fils	1 90
" J. L. B. Leclaire	24 74
" Munition & Machinery Ltd.	134 81
" Quebec, Montreal & Southern Ry. Co.	243 61
" The Sincennes, McNaughton Lines Ltd.	8 93
" Hopital General de Sorel	132 64
" Sorel Mechanical Shops Ltd.	2 68
" Sorel Snow-Shoe Club	179 55
" Sorel Shipbuilding & Coal Co. Ltd.	49 60
" Petty Sales	184 22
" Scrap Sales	14 02
" Stores and Materials	4,337 25
	37,854 53

LOUIS LACOUTURE,
Accountant.

\$ 1,405,473 09

SOREL SHIPYARD, March 31-4, 1917

SESSIONAL PAPER No. 21

Tug "James Howden".	3,940 01	3,793 02	1,450 40	620 44	1,461 42	1,112 20	12,377 49
Tug "Jessie Hume".	2,510 23	2,423 87	861 35	541 98	1,389 05	762 82	8,489 30
Stone Lifter No. 3.	140 80	1,275 49	430 71	292 97	843 19	294 52	3,277 68
Stone Lifter No. 4.	350 90	1,876 99	487 74	279 38	406 33	335 81	3,737 15
Stone Lifter No. 5.	311 35	1,240 66	436 06	295 85	1,025 60	326 74	3,636 26
Rock Cutter No. 1.	2,546 25	4,865 82	1,529 67	3,042 17	1,823 95	1,363 22	15,171 08
Floating Machine Shop.	75 95	1,279 62	723 87	252 92	521 61	281 77	3,135 74
	\$268,308 81	\$254,463 20	\$86,016 49	\$87,881 91	\$241,278 41	\$92,601 78	\$1,030,550 60
<i>Construction Dredging Fleet.</i>							
Dredge No. 1—Hull Renewed							
Wreck of Steamer "De Levis"							15,521 51
Wreck of Tug "Chambly".							366 41
Re Construction No. 19—Percentage on Plans							6,231 07
Re Construction No. 24—Percentage on Plans							2,500 00
							2,500 00
Maintenance of Sorel Shipyards.							27,118 99
Water Levels Investigation re River St. Lawrence.							43,642 26
							21,167 43
Total Expenditure on account of River St. Lawrence Ship Channel.							\$ 1,122,479 28

APPENDIX No. 5.

EXPENDITURE AND REVENUE.

STATEMENT OF EXPENDITURE AND REVENUE, MARINE DEPARTMENT, 1916-17

Service	Appropriation.	Expenditure.	Balance.
	\$ cts.	\$ cts.	\$ cts.
Office and Printing—			
Printing and stationery.....	1,180,000 00	1,035,251 27	144,748 73
Examination of masters and mates.....	16,500 00	14,087 87	2,412 13
Inspection of boats.....	12,300 00	4,918 98	7,381 02
Removal of obstructions.....	20,000 00	1,878 51	18,121 49
Registration of shipping.....	3,000 00	2,105 18	894 82
Examination of boats of navigation.....	8,000 00	4,461 92	3,538 08
Cattle inspection.....	5,000 00	2,401 18	2,598 82
Salaries to workmen.....	45,000 00	37,500 00	7,500 00
Transportation.....	5,000 00	266 80	4,733 20
Winter mail service.....	11,000 00	2,921 38	8,078 62
Transportation to and from Quebec.....	150,000 00		150,000 00
Total.....	1,455,800 00	1,105,793 09	350,006 91
Public Works—			
Ship channel.....	1,172,000 00	1,084,769 81	87,230 19
Dredging plant.....	452,715 00	261,221 39	191,493 61
Salaries to workmen.....	510,000 00		510,000 00
Allowance to Mde. I. Pinard.....	1,000 00	1,000 00	
Total.....	2,135,715 00	1,346,991 20	788,723 80
Lighthouse and Coast Service—			
Agencies, rents and contingencies.....	160,000 00	150,437 16	9,562 84
Salaries.....	475,000 00	462,406 58	12,593 42
Maintenance of property to lighthouses.....	750,000 00	652,591 05	97,408 95
Construction of lighthouses.....	750,000 00	331,222 30	418,777 70
Administration of pilotage.....	56,300 00	44,435 78	11,864 22
Repairs to lighthouses.....	10,000 00	6,682 44	3,317 56
Repairs to maritime roads.....	1,000 00	982 05	17 95
Pensions to pilots.....	9,300 00	8,700 00	600 00
Telephones re aids to navigation.....	500 00		500 00
Transportation.....	40,000 00	34,150 00	5,850 00
Allowance to harbour master, Amherstburg.....	400 00	400 00	
Allowance to Louis Ruel.....	100 00	100 00	
Salaries to workmen.....	60,000 00	51,858 79	8,141 21
Maintenance of property.....	20,000 00	353 00	19,647 00
Salaries to Harbour Master, Amherstburg.....	25,000 00	24,969 75	30 25
Total.....	2,407,600 00	1,769,288 90	638,311 10
Salaries and Expenses—			
Marine Hospital and Distressed Seamen.....	194,713 00	193,886 16	826 84
Marine Hospitals and Distressed Seamen—			
Marine hospitals.....	75,000 00	61,537 49	13,462 51
Distressed seamen.....	3,000 00	279 81	2,720 19
Seamen's hospital fund.....	5,000 00	5,000 00	
Total.....	83,000 00	66,817 30	16,182 70
Transportation—			
Transportation to and from Quebec.....	79,170 00	67,553 81	11,616 19
Total, marine service.....	6,355,998 00	4,751,286 46	1,604,711 54
Contingencies—			
Contingencies.....	20,000 00	194,778 15	22,221 65
Contingencies.....	46,000 00	21,000 00	25,000 00
Total, contingencies.....	266,000 00	215,778 15	44,552 31

SESSIONAL PAPER No. 21

RECAPITULATION OF SERVICE.

Service.	Appropriation.	Expenditure.	Balance.
	\$ cts.	\$ cts.	\$ cts.
Ocean and river	1,455,800 00	1,105,793 09	350,006 91
Public works (capital)	2,135,715 00	1,346,991 20	788,723 80
Lighthouse and coast	2,407,600 00	1,769,288 90	638,311 10
Scientific institutions	194,713 00	193,886 16	826 84
Marine hospitals	83,000 00	66,817 30	16,182 70
Steamboat inspection	79,170 00	67,559 81	11,610 19
Civil government salaries	217,000 00	194,778 35	22,221 65
Contingencies	46,000 00	23,669 31	22,330 69
Grand total	6,618,998 00	4,768,784 12	1,850,213 88

STATEMENT OF REVENUE, DEPARTMENT OF MARINE, for Fiscal Year Ending March 31, 1917.

	Gross.	Refunds.	Net.
	\$ cts.	\$ cts.	\$ cts.
Piers and wharves	85,276 14	521 00	84,755 14
Harbours	1,354 48		1,354 48
DOMINION STEAMERS.			
<i>Champlain.</i>			
Express, \$33.25; freight, \$2,140.22; passengers, \$6,494.68; war tax, \$11.80; meals, \$159.40	8,839 35		
<i>Montcalm.</i>			
Freight, \$22.50; passengers, \$49.35	71 85		
<i>Prince Edward Island.</i>			
Express, \$453.45; freight, \$8,041.30; passengers, \$3,143; war tax, \$52.90; meals, \$104.70; berths, \$14	11,809 35		
<i>Stanley.</i>			
Express, \$159.22; freight, \$1,201.19; passenger, \$596.50; meals, \$29.40; berths, \$95	2,081 31		22,801 86
Winter mail service	30 00		30 00
Signal service dues	842 00	2 00	840 00
Marine register fees	72 32		72 32
Sick mariners' fund	79,654 45	2,660 71	76,993 74
Examination masters and mates	4,606 43	6 50	4,599 93
Steamboat inspection fund	2,617 68		2,617 68
Engineers' fees	1,419 00		1,419 00
Decayed pilots' fund	5,230 88		5,230 88
Fines and forfeitures	468 73		468 73
Casual revenue sundries	375,402 36	2,088 41	373,313 95
	579,776 33	5,278 62	574,497 71

8 GEORGE V, A. 1918

STATEMENT OF SICK MARINERS' DUES COLLECTED.

Name of Port.	Collections.	Name of Port.	Collections.
	\$ cts.		\$ cts.
<i>Quebec.</i>		<i>Nova Scotia—Con.</i>	
Caspe.....	213 40	Lunenburg.....	268 10
Montreal.....	19,406 88	Middleton.....	0 29
Paspé.....	331 35	North Sydney.....	1,021 93
Percé.....	1 49	Parrishboro.....	392 52
Quebec.....	5,176 56	Pictou.....	228 61
Ramothski.....	154 58	Port Hawkesbury.....	17 80
St. John's.....	839 49	Port Hood.....	7 30
Saint John's.....	13 05	Shelburne.....	45 21
Trent River.....	119 35	Sydney.....	2,286 93
	26,256 15	Truro.....	11 95
		Weymouth.....	84 30
		Windsor.....	788 29
		Yarmouth.....	307 68
			20,402 17
<i>New Brunswick.</i>		<i>British Columbia.</i>	
Beauséjour.....	457 45	Nanaimo.....	2,091 34
Campbellton.....	476 78	Prince Rupert.....	951 07
Chatham.....	951 72	Vancouver.....	6,561 96
Dartmouth.....	460 82	Victoria.....	7,885 57
Fredericton.....	52 90		17,489 94
Moncton.....	300 00		
Newcastle.....	226 54		
Sackville.....	10 19		
St. Andrews.....	30 20		
St. John's.....	12,231 40		
St. Stephen's.....	66 16		
	15,264 16	<i>Prince Edward Island.</i>	
		Charlottetown.....	205 47
		Summerside.....	36 56
			242 03
<i>New Scotia.</i>			
Antigonish.....	127 81		
Antigonish River.....	23 16		
Antigonish.....	12 30		
Barrington.....	58 02		
Barrington.....	8 33		
Brudenell.....	158 34		
Cornwall.....	72 86		
Dartmouth.....	162 92		
Hartley.....	14,149 82		
Kentville.....	32 10		
Lebanon.....	121 92		
Lebanon.....	13 68		
			79,654 45

SEAPORT INSPECTION DUES.

<i>Ontario.</i>		<i>British Columbia.</i>	
Yamouche.....	45 68	Yamouche.....	695 52
<i>Quebec.</i>		<i>British Columbia.</i>	
Yamouche.....	45 68	Yamouche.....	45 68
		Yamouche.....	27 84
		Yamouche.....	1,848 64
		Yamouche.....	695 52
North Sydney.....	1,704 74		
	4 40		
	1,848 64		

MARINE REGISTER FEES.

Name of Port.	Collections.	Name of Port.	Collections.
	\$ cts.		\$ cts.
<i>Ontario.</i>		<i>Manitoba.</i>	
Midland.....	1 00	Winnipeg.....	1 40
Ottawa.....	0 20		
Picton.....	3 56	<i>British Columbia.</i>	
Toronto.....	5 44	Victoria.....	5 08
	10 20		
<i>Quebec.</i>		<i>Prince Edward Island.</i>	
Montreal.....	15 20	Charlottetown	1 40
Quebec.....	20 40		
	35 60	<i>RECAPITULATION.</i>	
<i>Nova Scotia.</i>		Ontario.....	10 20
Halifax.....	3 00	Quebec.....	35 60
Liverpool	4 80	Nova Scotia.....	18 64
Lunenburg.	5 60	Manitoba	1 40
Parrsboro.....	0 72	British Columbia	5 08
Shelburne.....	3 32	Prince Edward Island....	1 40
Yarmouth.....	1 20		72 32
	18 64	<i>SIGNAL STATION DUES.</i>	
		<i>Nova Scotia.</i>	
		Halifax.....	842 00

8 GEORGE V, A, 1918

List of Harbours and Harbour Masters.

Harbour.	Harbour Master.	Date of Appointment.	Gross Collections.	Remuneration.	Net collections.
			\$ cts.	\$ cts.	\$ cts.
<i>Nova Scotia.</i>					
Abbot Harbour.....	Vacant				
Advocate Harbour.....	Robert D. Atkinson...	May 2, 1913	7 00	100 00	
Amherst	Vacant		2 00		
Annapolis	George W. Cummings	April 17, 1915.		200 00	
Annapolis Basin	See Bear River, Clementsport, Digby, Port Wade.				
Annapolis Royal	See Annapolis				
Apple River	Wallace Green	May 24, 1911.		200 00	
Arichat	Charles V. Herbin	Nov. 27, 1913.	16 50	200 00	
Arichat West	Lawrence Forest	May 25, 1910		100 00	
Aspotogan Harbour	See Northwest Cove.				
Aspy Bay	See Bay St. Lawrence				
Baddeck	Peter L. McFarlane...	Mar. 6, 1909		100 00	
Ballantyne Cove	See McNair's cove.				
Barrington	Reuben R. Penny....	June 5, 1914	10 50	200 00	
Bayfield.....	David Sutton	Mar. 22, 1910	Nil.	200 00	
Bay St. Lawrence.....	James W. Fitzgerald..	Dec. 22, 1910	10 00	100 00	
Bay Shore.....	See Port Lorne				
Bear River	William McFadden	Sept. 27, 1897	15 00	100 00	
Beaver Harbour	Henry Hawbolt	Sept. 22, 1888	8 00	100 00	
Belliveau Cove	Frank LeBlanc	Dec. 6, 1912		200 00	
Bevis Port	See Big Harbour				
Big Harbour	Don. G. McKenzie	April 18, 1908		100 00	
Big Pond.....	Vacant.				
Bourgeois.....	See River Bourgeois.				
Big Bras d'Or					
1. New Campbell...	Duncan Carey.....	Feb. 12, 1912	1 50	200 00	
2. Great Bras d'Or.....	See Big Harbour.				
3. Little Bras d'Or	John M. Leblanc	Oct. 9, 1909		200 00	
Alder Pt. to Moore's Pt.					
4. Little Bras d'Or Lake, McKay's Point to Washabuck river...	Vincent McLean	Sept. 13, 1907		100 00	
5. Little Bras d'Or lake, McKay's Point to Grand Narrows	Vacant.				
Bridgewater	William Oakes	Jan. 28, 1896	169 00	100 00	
Canning	E. A. McBride	Jan. 18, 1913		200 00	
Cape Breton Pier.....	See Glasgow				
Cape Canso	George Oliver	Feb. 14, 1905	73 50	150 00	
Chabousson	Wentworth L. Jenkins...	Sept. 28, 1912		200 00	
Chatham	David Mills	Jan. 26, 1915	19 00	100 00	
Cheticamp	Eugene Arcan	April 15, 1876	3 50	100 00	
Clark Harbour	John G. Nickerson....	Mar. 23, 1904	23 50	200 00	
Clementsport.....	Charles I. Stronach...	Apr. 27, 1917.		150 00	
Colebrook Cove	See Northwest Cove.				
County Line to Grand Narrows	Vacant.				
Crofton Harbour	See Isaac Harbour.				
Cow Bay	See Port Morden				
Cranberry Point..	See Little Narrows				
Crow Harbour....	See Queensport.				
Dalhousie	Anna Langdon	Dec. 23, 1911	7 00	100 00	
Digby	Howard Anderson	June 19, 1902	29 00	200 00	
East Bay...	Vacant.				
East Jeddore	See Jeddore				
Englishtown..	See St. Ann's Bay				
Essex	Vacant				
Fairport	Fred B. Prince.....	May 2, 1912	4 50	200 00	
French Village....	See St. Margarets Bay.				
Tupper Cove	See St. Anns.				
Gebar...	George Harris..	Feb. 22, 1911		100 00	
Getson's Cove..	See Bay Have				
Gillis Point.....	See Little Bras d'Or (5).				

SESSIONAL PAPER No. 21

LIST of Harbours and Harbour Masters—*Continued.*

Harbour.	Harbour Master.	Date of Appointment.	Gross Collections.	Remuneration.	Net Collections.
<i>Nova Scotia—Con.</i>			\$ cts.	\$ cts.	\$ cts.
Glace Bay, Little.....	E. Douglas Rigby	Apr. 8, 1884..	16 50	200 00	
Glasgow.....	Donald J. McKinnon....	Dec. 30, 1916	38 00	300 00	
Grand Narrows.....	See County Line to Grand Narrows.				
Great Bras d'Or.....	See Big Harbour.				
Green Cove.....	See Port Maitland.				
Guysborough ..	Thomas O'Connor.	April 2, 1913		100 00	
Halifax.....	Francis G. Rudolf.....	May 13, 1910	1,832 00	1,800 00	32 00
Hall's Harbour ..	James Watson.....	Nov. 16, 1912.		100 00	
Hantsport	Wm. McCulloch ..	Jan. 17, 1902	21 00	300 00	
Hubbard Cove ..	Neil C. McLean.....	Nov. 5, 1913	4 00	200 00	
Indian Bay.	See Jordan Bay.				
Ingonish, North Bay of...	Angus McLean	Apr. 21, 1910	4 00	200 00	
Ingonish, South Bay of.....	Thomas A. Young.....	May 16, 1916	4 50	100 00	
Ingram River.....	Eugene Huntley ..	Jan. 19, 1907	23 50	100 00	
International Pier ..	Michael J. Neville.	Oct. 30, 1880	690 00	300 00	390 00
Isaac Harbour.....	Thomas D. Cook	June 19, 1900	21 50	100 00	
Jeddore.....	James E. Jennox.....	Aug. 5, 1912.	7 00	100 00	
Joggins Mines...	Anthony Brine.	Jan. 2, 1913..		200 00	
Jordan Bay...	Freeman P. Thorburn..	Mar. 11, 1901		150 00	
Kelly's Cove ..	Stephen J. Keddy ..	Oct. 3, 1914		100 00	
Lahave River.....	Geo. Henry Zwickler...	Feb. 25, 1875	54 00	300 00	
L'Ardoise, Upper and Lower	George Burke.....	Aug. 29, 1884		100 00	
Larry's Head River	See Torbay.				
Lingan.....	Vacant.				
Liscomb.....	Lewis Wilson	Feb. 20, 1900..	22 50	260 00	
Little Glace Bay.....	See Glace Bay.				
Little Narrows to Cranberry Point.....	Vacant.				
Liverpool	William A. Smith.....	July 13, 1916	184, 50	200 00	
Lockeport	Geo. James Locke	April 2, 1906..	35 00	100 00	
Louisburg.....	Thomas Bernard Peck..	April 19, 1917..	716 50	200 00	366 50
	Deputy—				
	Angus Chas. Beaton..	Sept. 11, 1915.		150 00	
Lower East Jeddore.....	See Jeddore.				
Lower L'Ardoise ..	See L'Ardoise.				
Lower Port Latour.....	See Port Latour.				
Lunenburg	Joshua B. Heckman, jr..	Oct. 1, 1909	181 00	200 00	
Mabou.....	William F. Rankin...	Feb. 18, 1915		100 00	
Mahone Bay.....	Aaron Hyson	Feb. 18, 1908	20 00	200 00	
Main-à-Dieu	Vacant.				
Marble Mountain.....	Donald McDonald	July 26, 1892.		200 00	
Margaree.	Frederick P. Chiasson	Mar. 6, 1909		100 00	
Margarets Bay.....	See Margaret Bay.				
Margaretville ..	Joseph Cleveland (Actg.)		5 00		
Marie Joseph ..	Charles A. Dixon..	Feb. 2, 1907	3 50	100 00	
Merigomish ..	Thos. B. Olding ..	Mar. 11, 1910..		200 00	
Meteghan Harbour.....	James McLair.....	Oct. 8, 1906..	12 00	100 00	
Meteghan River.	Luke A. Comeau ..	June 1, 1897		100 00	
Middle South Harbour.....	See Lunenburg.				
Musquodoboit	Thomas Williams ..	May 31, 1905		100 00	
McKinnon Harbour.....	Daniel Y. McNeil ..	Oct. 1, 1909..		200 00	
McNairs Cove ..	Ronald McEachen ..	Mar. 8, 1875.		150 00	
Negro Cape ..	James Smith	Feb. 10, 1917..	8 50	200 00	
Neils Harbour.....	Reuben Payne..	July 15, 1905		100 00	
New Campbellton	See Bras d'Or (1).				
New Haven.....	Vacant.				
Noel.....	John A. Hines ..	Dec. 29, 1914..	10 00	200 00	
North East Harbour.....	See Cape Negro.				
Northport..	Robert Drander.	Apr. 24, 1916.	11 50	100 00	
North Sydney.....	Ronald MacDonald....	Jan. 9, 1915	773 50	600 00	173 48
Northwest Cove.....	Albert Setter	May 22, 1912.		200 00	
Orangedale ..	John A. Martin.....	July 3, 1914		100 00	
Ostrea Lake.....	See Musquodoboit.				
Parrsboro.....	William R. Huntley.....	May 8, 1912..	106 50	300 00	

List of Harbours and Harbour Masters—Continued.

Harbour.	Harbour Master.	Date of Appointment.	Gross Collections.	Remuneration.	Net Collections.
<i>North Scotia—Con.</i>			\$ cts.	\$ cts.	\$ cts.
Petitdegrat Pembroke.	Elias Bois Harbour master at Wal- ton attends to duties here.	Feb. 9, 1912..	9 50	200 00	
Petite Riviere Bridge	Joseph N. Parks	April 27, 1888		100 00	
Plaster Harbour.....	Vacant.				
Port George.....	Vacant.				
Port Greville.	Austin Graham	April 27, 1909	32 00	200 00	
Port Hastings	George L. McLean	Feb. 15, 1908..	43 00	200 00	
Port Hawkesbury	John Lamey	June 2, 1909	63 50	200 00	
Port Hood	John H. Murphy	July 9, 1875	2 00	200 00	
Port Latour	William Sholds	Feb. 15, 1898	1 50	200 00	
Port Lorne	Thomas Templeman ..	Oct. 11, 1916		200 00	
Port Maitland	Jacob W. Raymond	Feb. 20, 1914	2 05	200 00	
Port Medway	Joseph Hopkins	Feb. 13, 1903..	22 50	200 00	
Port Morien ..	Hector McDonald.	March 3, 1879	1 50	400 00	
Port Mulgrave...	Joseph Moore	Jan. 20, 1912	23 00	200 00	
Port Wade	Abraham Holmes	Dec. 16, 1912..	3 50	200 00	
Pubnico	Peter Belliveau.	Nov. 25, 1911..	31 50	100 00	
Pugwash	Peter Stewart ..	Mar. 16, 1912	25 50	100 00	
Pictou.....	Under Harbour Commi ssion.				
Queensport	Alex. Carr	Feb. 20, 1914..	5 50	100 00	
River Bourgeois.....	Elias Canille Bouchie..	April 19, 1886..	3 50	100 00	
	Daniel Fougere	Aug. 12, 1889		By H.M.	
River Hebert	Winfield Y. Theal.....	July 24, 1905	1 00	100 00	
River John	Hugh Campbell	June 1, 1891		100 00	
Riverport	Ammon Ritecy	Sept. 11, 1915..	22 00	100 00	
Ritecy Cove.....	Now Riverport.				
Cape Sable Island ..	See Clark Harbour.				
Sandbro	Henry W. Smith	Feb. 18, 1913..	8 50	200 00	
Sandford	Henry W. Bourgoyne...	Feb. 18, 1915		100 00	
Sheet Harbour	Vacant.				
Shelburne	John M. Jordan.....	May 13, 1912..	125 50	200 00	
Sherbrooke	See St. Mary River.				
Ship Harbour	Hector Siteinan	Feb. 22, 1911.	4 50	100 00	
Smith Mountain	Now "St. Anns."				
Sotofa	See St. Mary River.				
South Bar	See Victoria Pier				
South West Cove.....	North West Cove.				
Spencer's Island	Baxter McLellan	May 22, 1899	24 00	100 00	
Sydney	See International Pier, Victoria Pier, Glasgow				
St. Anns, Lighttown	See St. Anns Bay.				
St. Ann	Now St. Ann Bay and St. Ann Harbour.				
St. Ann Bay.....	Duncan McCaskill	May 2, 1913	16 00	200 00	
St. Ann Harbour.....	Alex. McLeod	April 16, 1909		200 00	
St. Anns, including Tucker's Cove.....	See St. Anns Bay.				
St. Margarets Bay..	Henry C. Harrison	Feb. 18, 1902	1 00	100 00	
St. Marys River	Solomon E. Pride	Mar. 20, 1914	4 50	200 00	
St. Peter	Peter McNeil...	Sept. 17, 1883		200 00	
Tanger	Alex. Macdon	July 19, 1912..	2 50	200 00	
Tatamagouche	William Ruddy	June 1, 1900..	0 50	200 00	
Tenny Cape	William Stephen	Sept. 16, 1912		200 00	
Tidnish	Robert B. Davidson	Feb. 19, 1910..		100 00	
Tiverton	Jack Blackford	April 3, 1900..	1 50	100 00	
Torbay....	Charles Fougere	Aug. 25, 1903	12 50	200 00	
Turket	Cyrille Doyette	Nov. 21, 1902		100 00	
Tuxedo Weir	See Wedgeport				
Upper L'Anse-au-Loup	See L'Anse-au-Loup.				
Upper Port Latour	See Port Latour				
Victoria Pier....	Vacant.				
Wapogo	James D. Patton	Feb. 14, 1898.	2 50	100 00	

SESSIONAL PAPER No. 21

LIST of Harbours and Harbour Masters—*Continued.*

Harbour.	Harbour Master.	Date of Appointment.	Gross Collections.	Remuneration.	Net Collections.
			\$ cts.	\$ cts.	\$ cts.
<i>Nova Scotia—Con.</i>					
Walton.....	Clifford M. Parker.....	Aug. 4, 1916	20 00	200 00	
Washabuck.....	See Bras d'Or (4)				
Wedgeport.....	Henry A. LeBlanc.....	Mar. 3, 1911	11 50	100 00	
West Arichat.....	See Arichat West.				
West Bay.....	Resigned.				
Westport.....	Wm. B. Welch.....	Dec. 21, 1912		200 00	
Westport.....	Albert L. Daykin (Deputy (To act in absence of H.M.)).....	Mar. 30, 1914.	23 50		
West River.....	See Sheet Harbour.				
Weymouth.....	Vacant.				
Whitehead.....	Levi Munro.....	Feb. 8, 1909.		200 00	
Whitehaven.....	Now Whitehead.				
Whitepoint.....	John J. Donahue.....	April 19, 1917.		200 00	
Whycocomagh.....	Norman Matheson.....	July 6, 1909.		100 00	
Windsor.....	Chas. W. Baird.....	April 10, 1912..	164 00	300 00	
Wolfville.....	J. Loran Franklin.....	Aug. 16, 1901	9 00	100 00	
Woods Harbour.....	Nickerson, Gideon.....	Nov. 27, 1913.	8 50	200 00	
Yarmouth.....	R. M. Ferguson.....	April 27, 1912	153 00	250 00	
Total.....					961 98
<i>New Brunswick.</i>					
Alma.....	Gideon W. Parsons.....	May 2, 1898..	46 00	100 00	
Bald Cape.....	Cormier, Joseph L.....	Aug. 19, 1911.		200 00	
Bathurst.....	Daly, Michael T.....	April 15, 1907	99 00	200 00	
Blacks Harbour and Beaver Harbour.....	Cross, Elias W.....	Sept. 17, 1883..		100 00	
Buctouche.....	Smith, Peter.....	Dec. 9, 1915.		100 00	
Campbellton.....	Doherty, W. W.....	Oct. 9, 1912	148 00	200 00	
Campobello.....	Calder, Henry.....	April 25, 1912..		100 00	
Caraquet.....	James Lenteigne.....	June 11, 1913	3 00	150 00	
Chatham.....	Robert J. Walls.....	April 13, 1898..	304 50	300 00	4 50
	Claude Brown (Deputy)	May 29, 1912.			
Cocagne.....	Jean T. Bourque.....	June 23, 1905.		100 00	
Dalhousie.....	James Wallace.....	May 5, 1916	140 50	200 00	
Dipper Harbour.....	Vacant		16 50		
Dorchester.....	James Shea.....	Oct. 25, 1900.	4 00	200 00	
Fairhaven.....	Alonzo Calder.....	July 31, 1901		200 00	
Fredericton.....	Vacant.				
Grand Manan, Northern.....	Joseph E. Gaskell.....	Mar. 20, 1907..	8 00	100 00	
Grand Manan, Southern.....	See Whitehead, Grand Harbour and Seal Cove Harbour.				
Grand Harbour.....	Williard A. Ingalls.....	Dec. 11, 1915.		100 00	
Gull Rock.....	William E. Kiscaden.....	May 3, 1917		100 00	
Harvey.....	Henry W. Crocker.....	Dec. 25, 1915	10 00	100 00	
Heron Channel.....	George N. Taylor.....	Nov. 25, 1911		200 00	
Hillsborough.....	James T. Gallagher.....	June 26, 1912	33 50	100 00	
Hopewell Cape.....	John H. Christopher.....	June 26, 1899	1 00	200 00	
Joggins.....	See Rockland.				
Joggins, North.....	See Rockland.				
Letete, Back Bay.....	H. W. Harris.....	Feb. 16, 1906		100 00	
Loggieville.....	See Chatham.				
Moncton.....	Ezra P. Cook.....	July 4, 1912.		200 00	
Musquash.....	John McNulty.....	Sept. 28, 1896		100 00	
Newcastle.....	John Russell.....	June 27, 1904.		300 00	
North Head.....	See Grand Manan.				
Pokemouche.....	Michael Landry.....	May 13, 1901..		100 00	
Port Elgin.....	Charles Trenholm.....	April 3, 1907		200 00	
Richibucto.....	James A. Jardine.....	May 11, 1874	19 50	200 00	
Rockland.....					
Sackville.....	Elijah Chase.....	May 11, 1904	1 50	200 00	
Sealcove.....	William Russell.....	Feb. 22, 1913..	6 00	100 00	

8 GEORGE V, A. 1918

List of Harbours and Harbour Masters—Continued.

Harbour	Harbour Master.	Date of Appointment.	Gross Collections.	Remuneration.	Net Collections.
<i>New Brunswick—Con.</i>			\$ cts.	\$ cts.	\$ cts.
Shediac	Joseph M. Hebert	Sept. 9, 1914		300 00	
Shemogue, Great	Vacant.				
Shemogue, Little	Vacant.				
Shippigan	Cyprien Gionet	June 26, 1912	8 50	100 00	
Shippigan, Little Miscou Gully.....	Vacant.				
St. Andrews	William Clark	Dec. 23, 1911		100 00	
St. George	Allan Stewart	April 3, 1912	54 00	100 00	
St. Martins.....	Alfred Vaughan.....	Nov. 1, 1912	41 00	100 00	
St. Stephen.....	Andrew McWha	July 9, 1914	23 00	100 00	
St. Stephen, Ledge of	Theodore Holmes	Dec. 17, 1913		100 00	
Tormentine	Treen, Mathias S.	May 13, 1901		200 00	
Tracadie	Fred. Drysdale	April 1, 1916		100 00	
Verte, Baie.....	See Port Elgin.				
Waterside	Ira A. Copp	Jan. 25, 1913	2 00	400 00	
West Isles	Benj. Simpson	Sept. 27, 1901		200 00	
Whitehead	Andrew H. Cheney	Feb. 28, 1913	5 50	100 00	
Total					4 50
<i>Quebec</i>					
Amherst	John Cassidy	Sept. 2, 1878		200 00	
Bersimis	Laurent Thibault	Dec. 13, 1905		200 00	
Bie	Lerd. Bellavance	April 25, 1912		200 00	
Bohaventure	Ambrose Gauthier	Mar. 28, 1916	26 50	100 00	
Cape Cove	Robert J. Lanfesty.....	June 7, 1912		200 00	
Caplan	Theophile Bourdages	April 11, 1907		100 00	
Carleton	Wilfrid Allard	Feb. 12, 1916		200 00	
Chicoutimi	Henry A. Boisly.....	June 5, 1917		200 00	
Is. Outremont	Vacant.				
Croisets, Anse Aux	John Moutant	June 28, 1905		100 00	
Caspé	Francis J. Eden...	April 1, 1889		500 00	
Grand Entry	Andre Cyr	July 10, 1907		200 00	
Gravel River	George Belliveau	April 25, 1912		100 00	
House Harbour.....	Gregoire Lafrance	Dec. 12, 1910	38 50	200 00	
La Jatte	Under Montreal Harbour Commission.				
Malabar, Barachois de	John Thompson	May 27, 1913	5 00	200 00	
Maria	Arthur Cyr	Mar. 29, 1905		100 00	
Matane	Joseph Levesque	Jan. 20, 1912	64 50	200 00	
Metis	John H. Ferguson	Mar. 10, 1896		200 00	
Montmagny	Raoul Fournier	May 23, 1913	17 00	200 00	
Montreal	Under Harbour Commission.				
New Carlisle	John Chisholm.....	June 5, 1905		100 00	
New Richmond	Valmond LeBlanc	Mar. 17, 1915	23 00	200 00	
Newville	Joseph Casey...	Jan. 3, 1903		200 00	
Oak Bay	Thomas Harper.....	Sept. 11, 1909	54 50	200 00	
Paspébiac	Louis H. Castillon	Mar. 25, 1915	23 00	150 00	
Pereé	Eugene Donoghue.....	Oct. 10, 1903		100 00	
Port Daniel	Benjamin Langlois..	Feb. 26, 1907	30 00	200 00	
Quebec	Under Harbour Commission.				
Rimouski	A. P. St. Laurent	May 13, 1896	23 50	200 00	
Riviere du Loup.....	F. Emile Gilbert	Oct. 5, 1902		100 00	
Sault au Montreal	Chas. Ed. Nolet	April 11, 1907		200 00	
Sorel	Pierre Lavallee	Feb. 5, 1912	647 50	500 00	147 50
St. Godfrey	Jacques Grenier	June 5, 1905		100 00	
St. Johns	George H. Farrer...	Mar. 20, 1897	447 50	*636 00	
St. Omer.....	Alexander Laviolette....	Aug. 1, 1914	15 00	200 00	
St. Thomas de Montmagny, now Montmagny.					
Tadoussac..	Auguste Guéras	June 6, 1906		200 00	
Tras. Port des	Octave Drapeau	Nov. 25, 1911		100 00	
Three Rivers	Under Harbour Commission.				147 50

* Including \$45 for inspecting boats.

SESSIONAL PAPER No. 21

LIST of Harbours and Harbour Masters—*Continued.*

Harbour.	Harbour Master.	Date of Appointment.	Gross Collections.	Remuneration.	Net Collections.
			\$ cts.	\$ cts.	\$ cts.
<i>Ontario.</i>					
Amherstburg.	George Gott.	May 13, 1912		200 00	
Bronté.	Thomas Joyce.	Dec. 17, 1912		200 00	
Byng Inlet.	Harry Grasswell.	Feb. 20, 1912		200 00	
Belleville.	Under Harbour Commission.				
Collingwood.	Hughes, Robert.	Nov. 25, 1913	33 00	300 00	
Depot Harbour.	Vacant.				
Fort William.	Samuel G. Seagel.	Aug. 1, 1914	283 50	600 00	
French River.	Charles D. D. Udy.	April 25, 1912		200 00	
Goderich.	Malcolm McDonald.	April 17, 1912	16 50	300 00	
Hamilton.	Under Harbour Commission.				
Little Current.	W. D. Ritchie.	April 3, 1912	32 00	200 00	
Meaford.	William Cooke.	July 1, 1913	8 00	200 00	
Midland.	William McClinchey.	Aug. 16, 1913	108 00	300 00	
Owen Sound.	William Henry Smith.	April 25, 1912.	33 50	200 00	
Oshawa.	William Thos. Henry.	Aug. 10, 1904		300 00	
Parry Sound.	Lavoie, Thomas J.	Aug. 14, 1915		200 00	
Penetanguishene	Dusome, McKay.	Mar. 10, 1916	12 50	200 00	
Port Arthur.	Basile Guerard.	May 21, 1897.	105 00	300 00	
Port Hope.	Under Harbour Commission.				
Port McNicholl	See Victoria Harbour.				
Port Stanley.	F. R. Dale.	Aug. 13, 1912	22 00	200 00	
Rondeau.	James Claus.	Nov. 27, 1913	6 00	100 00	
Sarnia.	Robert McAdam.	May 3, 1886		300 00	
Sault Ste. Marie.	Sydney L. Penhorwood (on active service).				
	J. D. H. Browne (actg.)	May 12, 1912		300 00	
Southampton.	William H. Johnston.	Oct. 1882.	17 50	100 00	
Toronto.	Under Harbour Commission.				
Trenton.	Joseph Coutts.	May 13, 1912.	33 50	200 00	
Victoria Harbour.	Thomas Nottingham.	May 1, 1911.	62 50	200 00	
Whitby.	John Watson, jr.	June 7, 1912.	14 50	200 00	
<i>Manitoba.</i>					
Winnipeg and St. Boniface.	Under Harbour Commission.				
<i>British Columbia.</i>					
Burrard Inlet—now Vancouver.					
Chemainus.	Louis Germain Hill.	April 24, 1906.	33 50	200 00	
Comox.	Benj. S. Abrams.	June 10, 1914	318 50	200 00	118 50
Departure Bay.	See Nanaimo.				
Esquimalt.	See Victoria.				
Ladysmith.	Ira E. Lowe.	June 26, 1912.	123 50	200 00	
Nanaimo.	James S. Knarston.	Oct. 26, 1905.	622 00	500 00	122 00
New Westminster.	Under Harbour Commission.				
New Westminster.	W. B. Shields.	Feb. 15, 1908.	184 00	400 00	
North Fraser.	Under Harbour Commission.				
Ocean Falls.	Samuel D. Raymond.	Mar. 29, 1917.		200 00	
Pender.	Gordon S. Cook.	Sept. 19, 1916		200 00	
Prince Rupert.	Ed. McCoskrie.	Mar. 16, 1912.	329 00	600 00	
Quadra.	Vacant.				
Snug Cove.	William Jos. Davies.	July 19, 1911		200 00	
Vancouver.	Under Harbour Commission.				
Victoria.	Charles E. Clarke.	Nov. 3, 1894.	582 00	600 00	
					240 50

8 GEORGE V, A. 1918

List of Harbours and Harbour Masters—Continued.

Harbour.	Harbour Master.	Date of Appointment.	Gross Collections.	Remuneration.	Net Collections.
<i>Prince Edward Island.</i>			\$ cts.	\$ cts.	\$ cts.
Alberton	Albert L. Kinch.....	July 19, 1912..		200 00	
Belle River.....	Malcolm F. Riley	Sept. 18, 1914..		200 00	
Bay Fortune	John R. Coffin	April 29, 1878..		200 00	
Brudenell	John A. Gordon	Oct. 26, 1905		200 00	
Cardigan	Hereules McDonald.	July 2, 1878..		200 00	
Cardigan River	Donald MacKenzie	June 14, 1913..		100 00	
Charlottetown...	Joseph Ryan	May 3, 1912..	135 00	400 00	
Cove Head	Malcolm S. Kielly	April 23, 1904..		100 00	
Crapaud	Wesley Myers	June 17, 1874	4 00	200 00	
Egmont Bay.....	Albert A. Moore	Mar. 18, 1916		200 00	
Georgetown	Samuel J. Hemphill.	Dec. 17, 1912	9 50	200 00	
Grand River.....	Isaac Howlett	Aug. 26, 1912		200 00	
Grand Tracadie.	James J. McAulay	April 18, 1910		200 00	
Hillsboro.....	See Charlottetown				
Port Hill.....	Vacant.				
Malpeque	John Hickey	May 8, 1915.		200 00	
Miminegash.	Mark D. Lacy	Jan. 30, 1914	4 00	100 00	
Montague	D. T. Stewart temp.	April 27, 1913			
Murray Harbour	Gabriel Billard..	Oct. 30, 1913	4 50	200 00	
Murray River.....	Vacant.				
New London	Jonathan Delaney.	April 28, 1914	1 50	200 00	
Piquette	John D. McDonald.	Oct. 22, 1903	1 00	100 00	
Pownall.	Vacant.				
Rollo Bay.....	Vacant.				
Rustico, North.	Thomas Pineau	June 9, 1914	2 00	200 00	
Sagris, E. and W.	Joseph Tiernay	May 15, 1905	31 00	200 00	
Summerside	John Matheson.....	Feb. 8, 1907		200 00	
St. Peter Bay.....	George Barry	May 3, 1901		200 00	
Tignish	Vacant.				
Tryon	Vacant.				
Upper Cardigan River	See Cardigan River.				
Vernon River bridge	John Linsay	Oct. 9, 1884		200 00	
West River.	Vacant.				
Wood Island	James Young	May 22, 1899	0 50	100 00	

SESSIONAL PAPER No. 21

HARBOURS and Officers of Harbour Commission.

Harbour.	Chairman.	Secretary.
<i>Ontario.</i>		
Belleville.....	B. L. Hyman.....	A. P. Allen.
Toronto.....	Lionel H. Clarke.....	John Lee.
Hamilton.....	Geo. J. Guy.....	H. E. Waterman.
Port Hope.....	H. H. Burnham.....	Jas. Evans.
<i>Quebec.</i>		
Montreal.....	W. G. Ross.....	David Seath.
Quebec.....	D. O. Lesperance.....	Chas. Smith.
Three Rivers.....	Jas. F. Bellefeuille ..	Alfred Desilets.
<i>Manitoba.</i>		
Winnipeg or St. Boniface.....	J. H. Ashdown.....	E. Stewart.
<i>British Columbia.</i>		
New Westminster.....	F. J. Coulthard.....	Frederick N. Sinclair.
Vancouver.....	F. Carter Cotton.....	H. D. Harvie.
<i>Nova Scotia.</i>		
Pictou.....	D. Sutherland.....	H. B. Ross.

List of Wharves and Wharfingers.

Locality.	Wharfinger.	Date of Appointment.	Remuneration allowed.	Amount forwarded to Department
Ontario.			p.c.	\$ cts.
Arnprior				
Barry's Bay	Stephen E. Smith	Aug. 25, 1905	25	
Baysville	Jas. D. Smith	Sept. 25, 1906	25	
Blind River	Wm. H. McGauley	April 14, 1908.	50	285 90
Bracebridge				
Brighton	W. S. Strong	Mar. 7, 1913.	25	
Bronte	Thos. Joyce	Dec. 17, 1912	25	27 00
Burks Falls	A. J. Collins.....	Feb. 8, 1907	25	
Bruce Mines	Wm. Fleming	April 15, 1902	50	86 14
Cache Bay	Bower Bain	Feb. 15, 1917.	25	
Chate à Blondeau	Ovila Cousineau	May 28, 1909	40	72 64
Cobourg				
Cockburn Island	D. J. McLeod.....	June 29, 1910	50	
Cooks Bay	See Silverwater.			
Depot Harbour	Wm. H. Hoppins	May 8, 1907	25	
Echo Bay	T. H. McWatters	June 5, 1912	25	
Gananoque	Under Militia Dept.			
Goderich	Malcolm McDonald	Mar. 7, 1913	25	119 54
Haileybury (3 docks).....	W. J. McLean	May 19, 1917.	25	250 08
Hilton	Peter Brown	Mar. 25, 1912	50	152 60
Honora	G. E. Hawke	May 12, 1909	25	
Huntsville	Leased to town	Aug. 29, 1911	\$35 per annum.	
Kagawong	Gustavus Buck	June 4, 1917	25	
Kingsville	Wm. H. Black.....	Aug. 1, 1902..	25	168 96
Lakeport	J. Dougherty	Oct. 17, 1914	25	
Lancaster, South	John Munro	Sept. 19, 1912	25	20 84
Leamington	J. E. Johnson.....	May 11, 1906	25	296 01
Lions Head	Charles Knapp.....	Feb. 6, 1906	25	
L'Orignal	Ovide Dubois, acting	July 7, 1913.		50 00
Maganawan	Conrad Ross	April 6, 1910	25	
Michipicoten Harbour	George Reed	Mar. 27, 1913..	25	54 04
Midland	John Yates	Oct. 26, 1905..	25	371 18
Morpeth	C. Stammers	Aug. 1, 1894	25	
Nipissing	H. Chapman	May 18, 1917	25	
New Liskeard	J. C. Chapman	Sept. 8, 1916	25	71 13
North Bay	J. H. Kennedy	Dec. 16, 1915	50	53 81
Oakawa	Wm. T. Henry	Aug. 10, 1904	\$400	
Owen Sound	Leased to Grand Trunk Ry. by P.W.D.			
Parry Sound Wharves	Under agency of Marine Dept.			
Parry Sound wharves	Leased to town.			
Pelee Island				190 07
Pembroke	Thos. Lowe	Mar. 7, 1913..	\$200	36 60
Port Enderby	John Coward	April 7, 1915	50	
Port Rowan				
Port Whitby	J. Watson, jr	Sept. 30, 1912.	25	31 31
Portland	A. Gallagher	Sept. 25, 1915.	25	
Providence Bay.....	E. L. Patton	Feb. 19, 1915	50	52 27
Richards Landing	James Birtside	Mar. 16, 1912	50	105 88
Rosario	James Chris	Nov. 27, 1913	25	10 80
Rossport.....				
Rosseau.....				
Sault Ste. Marie...	J. D. H. Brown	July 15, 1916	\$100 per month	1,190 41
St. Catharines	Eden Robbins	July 13, 1916	25	27 74
St. Elier	H. K. Quick.....	May 21, 1915	25	
Silver Centre	Pickering, H....	July 17, 1911	25	
Silverwater	Chas. K. Kent.....	May 28, 1909..	50	
Southampton....	H. Farmer.....	May 24, 1912	25	42 35
Sturgeon Falls..				
Summerstown..	A. Bonneville	May 25, 1910	25	
Thornbury Lake	See Villenarrie			
	Haileybury			
	New Liskeard.			
	Thore			
	Notre Dame de Quinze			

SESSIONAL PAPER No. 21

List of Wharves and Wharfingers—Continued.

Locality.	Wharfinger.	Date of Appointment.	Remuneration Allowed.	Amount forwarded to Department
Ontario—Con.			p.c.	\$ cts.
Tenby Bay	P. Jacobs	May 22, 1912	25	
Thessalon	Wm. H. Hill	Feb. 29, 1912	50	
Treadwell	H. Duchesne	April 20, 1914	50	40 94
Wendover	M. St. Pierre	Feb. 20, 1913	50	56 62
Warton	E. Shackleton	Sept. 12, 1913	25	
Windermere	Leased to township of Watt for 3 years	July 30, 1915		50 00
Windsor	Isaac Watts	March 18, 1916	25	149 56
Total				4,198 68
Montreal District.				
Agnes (St. Agnes)	L. A. Roy	Nov. 27, 1891	25	5 00
Angers	Vacant.			
Aylmer	Vacant.			
Boucherville	N. Sicotte	April 17, 1913	25	
Cap de la Madeleine	Vacant.			
Cascades	Vacant.			
Cedars	C. Laboursadiere	May 27, 1907	50	
Coteau du Lac	A. St. Amour	July 4, 1912	50	0 15
Coteau Landing	N. Beriault	June 29, 1910	50	32 50
Desjardins	P. Desjardins	Mar. 31, 1906	25	
East Templeton	L. Campeau	May 13, 1912	50	25 22
Fassett	F. Thomas	April 28, 1914	50	30 00
Graham	A. Bertrand	Feb. 22, 1911	50	27 69
Greece Point	T. Ranger	July 16, 1902	25	
Hudson	C. Bertrand	June 25, 1912	50	61 70
Ile Perrot (North)	O. Legault	May 30, 1910	25	51 68
Ile Perrot (South)	R. D'Aoust (acting)	Aug. 8, 1908	50	
Knowlton Landing	L. Knowlton	Mar. 23, 1910	25	22 50
Lacolle	R. J. Robinson	Mar. 8, 1894	25	
Lake Megantic	Vacant.			
Magog	D. E. Peters	June 10, 1906	50	42 78
Masson	O. Daoust	May 2, 1913	\$100 per annum	
Montebello	E. Major	July 3, 1915	50	72 50
Papineauville	A. Chabot	April 10, 1912	50	105 00
Peel Head Bay	A. N. Roy	Jan. 8, 1907	25	
Pointe à Valois	L. Castonguay	Oct. 20, 1897	50	19 74
Pointe Fortune	Wm. Brown	April 26, 1910	25	8 24
Port Lewis	S. Carson	Dec. 17, 1912	25	15 63
Rigaud	O. Malette	Oct. 14, 1907	50	60 13
Sabrevois	Vacant.			
Sorel	G. Gariepy	July 23, 1915	25 up to 300	57 04
St. Anicet	Moise Cote	Aug. 30, 1913	50	93 76
Ste. Anne de Bellevue	M. C. Bezner	May 21, 1908	50	89 46
St. Denis	Vacant.			
St. Marc	Vacant.			
St. Zotique	Vacant.			24 16
Thurso	F. Filion	Oct. 27, 1916	25	76 97
Varennas	O. Payette	Dec. 24, 1914	25	
Vaudreuil	O. Boileau	Mar. 14, 1914	50	33 32
Vercheres	P. Guyon	April 21, 1916	25	
Victoria Bay	Vacant.			
Ville Marie	J. J. Maillard	Feb. 2, 1899	25	
			Total	955 17
Quebec District.				
Amherst	J. C. Boudreau	July 1, 1913	25	315 68
Anse à L'eau	Vacant.			
Anse à L'Islet	J. Duguay	Sept. 17, 1912	25	140 39
Anse aux Gascons	S. A. Huard	May 5, 1913	25	17 36
Anse St. Jean	E. Lavoie	Feb. 27, 1917	\$25 per annum	103 06

8 GEORGE V, A. 1918

List of Wharves and Wharfingers—Continued.

Locality.	Wharfinger.	Date of Appointment.	Remuneration allowed.	Amount forwarded to Department.
Quebec District—Con.			p.c.	\$ cts.
Beauport	F. Gaillot	April 25, 1915	50	85 44
Berthier	J. Blais	Nov. 7, 1905	50	55 44
Bie	L. Roy	Nov. 16, 1912	25	
Baie St. Paul.....	See Cap aux Corbeaux.			
Bonaventure River.....	Vacant.			
Cap a l'Aigle	F. Charette	Feb. 27, 1917.	\$20 per annum	85 50
Cap aux Corbeaux	P. Cimon.....	Feb. 27, 1917	\$25 per annum	154 19
Carleton.....	E. Cyr.....	Feb. 15, 1916	\$50 per annum	
Chateau Richer	N. Pare.....	May 13, 1912	25	7 12
Chicoutimi	T. Tremblay	Feb. 27, 1917	\$125 per annum	1,780 94
Douglas town	J. McAnley	June 23, 1916	25	
Gaspé Basin	P. S. Lafontaine	Jan. 8, 1916	25	112 50
Grande Entree	F. Leslie	Jan. 30, 1915	25	175 06
Grande Riviere	G. Belliveau	April 27, 1912	25	121 03
Grindstone	A. Gaudet	April 18, 1914	25	475 88
Ile aux Coudres	P. Pednaud	Jan. 15, 1916	25	
Ile aux Grues	D. Vezina	June 30, 1904	25	
Les Ebolements	H. Tremblay	Feb. 27, 1917	\$30 per annum	122 09
L'Islet	Under lease.			
Matane.....	Alex. Pelletier	Jan. 20, 1912	50	189 27
Mechins	E. Verreault	Feb. 14, 1913.	50	94 21
Magnasha	Vacant.			
Montmagny	R. Fournier	Feb. 24, 1916	50	
Montmagny Basin.....	R. Fournier.....	Feb. 24, 1916	50	67 39
Murray Bay.....	Wm. Tremblay	Mar. 14, 1913	Nil.	715 11
New Carlisle	A. M. Caldwell.....	Mar. 29, 1917.	25	7 42
Paspébiac	J. de Caen	Feb. 22, 1908	50	73 90
Perce	J. M. LeBoutillier.....	April 17, 1912	\$25 per annum and 40%	71 78
Pointe aux Esquimaux	Vacant			100 00
Port Daniel.....	F. X. Gagnon	Feb. 26, 1907	\$50 per annum	47 95
Ramouski	E. Lavoye	Mar. 27, 1907	50	177 44
Riviere Blanche.....	A. Quimper	Jan. 20, 1912	50	83 31
Riviere du Loup	L. J. Puize	Feb. 27, 1917	\$146 per annum	165 30
Riviere Ouelle.....	J. A. Gamache.....	June 23, 1913	25	34 26
Roberval	S. Martel	June 9, 1914	50	255 25
St. Alphonse	T. Fortier	Feb. 27, 1917.	25% to \$100, also \$50.	328 50
St. Cecile du Br.	O. LeBel	Jan. 20, 1912	25	10 30
St. Irree	Geo. Bouchard	Feb. 27, 1917	\$25% and \$25	130 45
St. Jean, I.O.	Vacant			100 00
St. Jean Port Joh	L. Legros	Jan. 16, 1913	25	
St. Laurent, I.O.....	T. Coulombe.....	Nov. 11, 1915	50	60 55
St. Nicholas	Under lease			50 00
St. Simeon.....	L. Tremblay	Feb. 27, 1917	25 and \$30	124 58
Tadoussac	A. Gingras	Feb. 27, 1917	25 and \$35	140 00
Trois Pictols	P. Paré	June 12, 1915	25	
Interest to Dec. 31 on wharfage	Deposits			6 31
			Total	6,784 96
New Brunswick				
Albert	H. W. Crocker	Sept 20, 1916	25	10 03
Alsea	G. W. Parsons.....	May 21, 1915	25	
Anderson Hollow....	E. H. Cepp	Jan. 25, 1913	25	88 12
Baie du vin.....	W. Wilkinton	June 5, 1915	25	
Barade Wharf	Thos. Blakney	May 4, 1917	25	
Bathurst.....	E. C. Mcahan	June 15, 1912	25	
Beaver Harbour.....				
Black River	A. L. Moore.....	Jan. 23, 1914	25	0 68
Bathouche	J. J. LeBlanc	May 2, 1892	25	
Barré Church	J. Anderson.....	Feb. 26, 1904	25	
Campbellton	W. W. Doherty...	Oct. 19, 1912	25	2,090 52
Carleton Place	J. O. Channon	Sept. 30, 1914	25	

SESSIONAL PAPER No. 21

List of Wharves and Wharfingers—Continued.

Locality.	Wharfinger.	Date of Appointment.	Remuneration allowed.	Amount forwarded to Department.
<i>New Brunswick—Con</i>			p.c.	\$ cts.
Caraquet.....	J. L. Foulem.....	Dec. 30, 1916..	25	59 47
Clifton.....	Vacant.			
Cocagne.....	J. T. Bourque.....	Mar. 13, 1907..	25	
Coles Point.....	J. B. Tower.....	June 21, 1909..	25	
Dalhousie.....	J. Wallace.....	May 4, 1916..	25	164 14
Dipper Harbour.....	A. G. Thompson.....	July 8, 1915..	25	39 72
Edgetts Landing.....	Moses Steeves.....	Mar. 27, 1912..	25	107 43
Gardners' Creek.....	J. J. Armstrong.....	Dec. 22, 1909..	25	
Grandigue.....	E. Babineau.....	Nov. 12, 1914..	25	
Great Salmon River.....	W. Seeley.....	April 24, 1916..	25	
Harvey bank.....	J. A. Bishop.....	May 15, 1917..		
Hopewell Cape.....	W. B. Jamieson.....	Dec. 17, 1915..	25	
Hopewell Hill.....	F. J. Robinson.....	July 17, 1909..	25	
Kingston.....	See Rexton.			
Lameque.....	G. Chiasson.....	Sept. 8, 1915..	25	186 65
Leonardville.....	Vacant.			
Loggieville.....	A. J. Fraser.....	Nov. 15, 1915..	25	
Lorneville.....				
Main River.....	A. S. Murray.....	Mar. 1, 1906..	25	
Miscou Harbour.....	H. Harper.....	Aug. 21, 1915..	25	
Moncton.....	E. P. Cook.....	April 17, 1915..	25	98 93
Neguae.....	Ed. McIntosh.....	May 9, 1916..	25	
North Head, Grand Manan....	S. Dinsmore.....	Dec. 19, 1916..	25	4 61
Oromocto.....	Vacant.			
Partridge Island.....	Vacant.			
Petit Rocher.....	J. Boudreau.....	Aug. 27, 1909..	25	
Quaco.....	See St. Martins.			48 72
Rexton.....	T. Harnett.....	Aug. 2, 1911..	25	
Richibucto.....	See Main River.			
Shediac.....	J. L. Gallant.....	Dec. 7, 1916..	25	
Shippigan.....	G. J. Henry.....	April 6, 1910..	50	153 02
Stonehaven.....				
Salmon River, E. and W.....	See Great Salmon River.			
St. Andrews.....	S. H. Rigby.....	Nov. 24, 1914..	25	
St. George.....	Vacant.			
St. John (Sand Point) Docks 6 and 7.....	E. C. Elkin.....	Nov. 16, 1910..	25	26,262 75
St. John West—(Dock 15.....	Agent of Marine Dept.....	Mar. 18, 1917)	Not to exceed \$1,500 in any one year.	34,647 75
(Dock 16.....	" ".....	April 4, 1917)		
St. Louis.....	Vacant.			
St. Martins.....	A. Vaughan.....	Nov. 5, 1912..	25	
St. Marys.....	H. M. Leger.....	Dec. 19, 1905..	25	
St. Nicholas.....	J. Grant.....	Sept. 27, 1901..	25	
Tabusintac.....	W. M. Beattie.....	Dec. 18, 1915..	25	
Tracadie.....	L. Brean.....	Oct. 12, 1910..	25	2 79
Two Rivers.....	J. Knowlton.....	May 27, 1913..	25	
Waterside.....	See Anderson Hollow.			
Welchpool.....	Vacant.			
			Total.....	63,974 66
<i>Nova Scotia.</i>				
Advocate.....	Vacant.			
Amaguandas.....	New Castle Bay.			
Annapolis Royal.....				5 75
Arichat.....	D. H. Cutler.....	Mar. 21, 1912..	25	47 10
Arisaig pier.....	Vacant.			
Avonsport.....	L. F. Fuller.....	Aug. 13, 1902..	25	9 13
Babins Cove.....	S. N. Vigneau.....	Jan. 20, 1914..	25	13 52
Baddeck.....	A. S. McDonald.....	Nov. 25, 1912..	25	255 14

SESSIONAL PAPER No. 21

List of Wharves and Wharfingers—*Continued.*

Locality.	Wharfinger.	Date of Appointment.	Remuneration allowed.	Amount forwarded to Department
<i>Nova Scotia—Con.</i>			p. c.	\$ cts.
Jordan River	Vacant.			
Kelly Cove.....	J. S. Keddey.....	Jan. 19, 1916	25	
Kingsport.....	See Oak Point pier.			
Lismore				
Little Tancook Island.				
Little Narrows.....	Vacant.			
Little River.....	O. E. Denton.....	Feb. 5, 1912..	25	21 19
Maitland (Hants Co.).	Vacant.			
Margaree Harbour.....	A. R. McDougall..	Aug. 19, 1916.	25	
Margaretville.....	W. F. Early.....	Jan. 15, 1912..	25	66 63
Meteghan Cove.....	M. S. Robichaud.	Dec. 7, 1909.	25	
Minasville.....	Vacant.			
Meteghan River	C. F. Melanson.	Sept. 1, 1915..	25	70 62
Middle County	Vacant.			
Militia Point.....	D. McIntosh	Aug. 20, 1892.	25	
Mill Creek.....	J. E. Porter.....	Jan. 31, 1914	25	
Monday Point.....	Vacant.			
Morden.....	L. Graves	May 4, 1916.	50	25 33
McNairs Cove	H. S. McDonald.....	June 23, 1916.	25	
New Edinburgh.....	C. T. D'Eon.....	April 3, 1912..	25	
Newellton.....	L. J. Penney.....	Dec. 30, 1916	25	2 59
Noel.....	Vacant.			
Northeast Harbour	Not transferred.			
Oak Point.....	I. N. Cox.....	Dec. 1, 1915.	25	544 67
Ogilvie	J. L. Swindle.....	Mar. 4, 1907.	25	
Ostrea Lake.....	T. Grant.....	Aug. 15, 1917	25	
Owl's Head	D. Palmer, jr.....	April 13, 1910.	25	
Port Bickerton				
Port Clyde	G. Swain	April 1, 1915..	25	26 76
Port Dufferin.....	Vacant.			
Port Felix.....	J. David	May 4, 1917.	25	
Port George.....	Vacant.			
Port Greville.....	Vacant.			
Port Hastings.....	C. McDonald.....	Dec. 11, 1915	25	22 16
Port Hawkesbury.....	F. McInnes	Mar. 20, 1907.	25	148 05
Port Howe	See Port Phillip.			
Port Hood	I. P. Smith.....	Dec. 20, 1912	25	
Port Joli.....	J. I. McAdams.....	Feb. 5, 1900	25	
Port Latour.....	E. R. Reynolds.....	May 23, 1914	25	15 35
Port Lorne.....	T. Templeman.....	Oct. 11, 1916	25	32 22
Port Maitland.....	J. W. Raymond.....	Feb. 20, 1914	25	16 79
Port Mouton.....	I. Leslie.....	Oct. 17, 1912	25	1 13
Port Morien.....	W. A. Brunn.....	Oct. 2, 1912	25	46 51
Port Phillip	G. Mills	Nov. 24, 1916		
Port Wade.....	E. H. Johns.....	April 3, 1912	25	21 44
Parker Cove.....	D. Robinson	Dec. 13, 1913	25	6 59
Parrsboro	Vacant.			
Partridge Island.....	See Parrsboro.			
Portapique				
Phinney Cove	O. White.....	Aug. 15, 1916	25	
Pickett's Wharf..	F. A. Eaton	Aug. 2, 1899.	25	23 42
Pictou Island.....	Vacant.			
Plympton.....	W. K. Smith.....	Aug. 8, 1890	25	9 27
Plymouth	J. B. Purdy	Feb. 22, 1902	25	
Poulamond. .	C. N. Pertus	Nov. 18, 1911.	25	19 15
Rays Creek	F. W. Harris	Dec. 3, 1915.	25	5 42
Riverside	Vacant			
Sandford . . .	See Cranberry Head.			
Salmon River.....	See Port Dufferin.			
"	J. F. LeBlanc.....	Nov. 25, 1913.	25	
Saulnierville. . .	J. T. Saulnier.....	Aug. 25, 1888	25	2 75
Scotch Cove . . .				
Seal Island				
Shag Harbour.....	H. L. Shand.....	Jan. 31, 1916..	25	25 21
Sheet Harbour.....	See East River and West River.			

8 GEORGE V, A. 1918

List of Wharves and Wharfingers—Continued.

Locality.	Wharfinger.	Date of Appointment.	Remuneration allowed.	Amount forwarded to Department
New Scotia—Con.			p. c.	\$ cts.
Shallburne	A. McCarthy	Sept. 19, 1916	25	42 14
Short Beach	Vacant.			
Spencer Island	H. E. Grant	June 24, 1911	25	
Swinas Point	J. A. Crowell.....	Mar. 21, 1913..	25	26 76
Tancook	H. B. Slaughenwhite.....	Jan. 28, 1915..	25	
Tenny Cape	Vacant.			
Tidnish	R. A. Smith.....	Sept. 27, 1901	25	
Tiverton	B. Blackford	Oct. 17, 1906	25	58 51
Town Point	J. A. Haley.....	Aug. 16, 1901	25	
Tracadie	Vacant.			
Tupperville	Vacant.			
Tusket Whinge	Vacant.			
Victoria Pier	D. O'Gulvie	Aug. 13, 1911	25	
Wallace, S. Side	Vacant.			
“ N. Side.....	Vacant.			
Walton	Vacant.			
Walden	J. M. Neil	May 15, 1916	25	
West Annapolis Wharf	C. J. Terrio.....	Oct. 28, 1915..	25	55 48
West Head (Cape Sable)	H. N. Newell.....	Feb. 7, 1910..	25	
Westport.....	W. E. Kent.....	Sept. 16, 1912	25	46 23
West Point	A. A. D'Eon	Feb. 20, 1914	25	21 15
West River				
Whitehead.....	L. L. Munroe	Oct. 23, 1906	25	
White Point	E. A. West.....	Jan. 9, 1889	25	
Whitewater	H. S. Winter	April 22, 1913	25	13 06
Whycomagh	D. Lavinstone	Dec. 22, 1906	25	
Wolfville	J. L. Franklyn.....	Oct. 22, 1901	25	28 44
Wreck Cove.....	Vacant.			
			Total	\$6,021 69
Prince Edward Island.				
Aitkens Shore Pier	See Aitkens Ferry			
Aitkens Ferry	J. A. Hewitt.....	April 3, 1912	25	
Annapolis	I. H. Howlett.....	Aug. 26, 1912	25	87 42
Bayville wharf	Vacant.			
Bayview	D. V. Fleming.....	June 11, 1915	25	1 26
Belfast...	T. McLellan.....	Jan. 8, 1915..	25	76 76
Brackish wharf	H. A. McDonald.....	Sept. 30, 1914	25	22 23
Campbell Cove Breakwater	Vacant.			
Chapel Point Wharf.....	R. H. McCormack.....	July 19, 1912	25	16 44
Charlottetown	Under agency of Dept. of Marine			2,413 25
China Point.....	Wm. S. N. Crane.	Sept. 18, 1885	25	25 86
Cornwall	J. Gunn.....	May 24, 1900	25	
Croftville	See Victoria Pier.			
Edmundston				
French River	Wm. J. Hayward	April 21, 1916	25	
Georgetown	R. R. Jenkins	Oct. 14, 1902	25	21 40
Grand River South	Wm. A. Crossman.....	Jan. 14, 1914	25	
Grand River	See Annandale.			
Green River	Wm. Butler	April 24, 1911	25	12 76
Hagerly wharf	I. C. Callahan	June 25, 1912	25	24 64
Hickey's wharf....	P. McGuirk.....	April 2, 1914	25	26 06
Huggins Shore	A. A. Moore	Jan. 31, 1916	25	3 00
Hurds Point....	M. R. Holland	May 21, 1913	25	
Kiers Shore	Wm. Hodgson.....	June 10, 1895	25	97 78
Lambton Pier	W. A. Johnston	May 3, 1900	25	36 60
Lower Point	J. G. Scrimjeour.	May 22, 1915	25	
Montserrat, Lower	See Aitkens Ferry.			
Mount Stewart	D. Birt (acting).....	Sept., 1910		29 69
Mink River.....	B. S. Richards.....	Jan. 19, 1909	25	10 50
Murray Harbour South	G. Billard	June 14, 1913	25	16 87
Murray Harbour North	See Mink River...			

SESSIONAL PAPER No. 21

List of Wharves and Wharfingers—Concluded.

Locality.	Wharfinger.	Date of Appointment.	Remuneration Allowed.	Amount forwarded to Department
<i>Prince Edward Island—Cen.</i>			p c	\$ cts.
McPherson Cove.....	J. D. Christian.....	April 18, 1914	25	16 61
Nine Mile Creek.....	C. McDonald.....	Mar. 14, 1914	25	
Newport	See North Cardigan.			
North Cardigan.	H. McDonald	May 23, 1914	25	55 21
Oysterbed Bridge	H. Gallant...	May 22, 1912.	25	
Pinette	Vacant.			
Pownal Pier..	M. M. Haley.....	Oct. 13, 1896	25	26 39
Red Point..	A. McAulay	May 24, 1912.	25	
Souris				
South River..	Vacant.			
Sturgeon	Wm. Griffin	Nov. 9, 1912.	25	27 35
Stephens	See Lamberts Pier.			
St. Marys Bay .	G. H. Hicken	June 11, 1910	25	20 95
Tignish.	Wm. A. Gaudet.....	April 28, 1914	25	
Vernon River	I. Finlay. .	April 25, 1912	25	48 31
Victoria Pier.....	J. Day.....	Sept. 30, 1912.	25	203 25
West Point.....	Vacant.			
Wood Island	J. Young.....	April 10, 1899	25	7 04
			Total ..	3,337 63
<i>British Columbia.</i>				
Kaslo.				
Ladysmith...	T. D. Conway	Feb. 6, 1906.	25	
Langley ..	Vacant.			
Masset	Vacant.			
Mirror lake.....				
Sidney.	C. C. Cochrane			3 35
Stewart.....				
			Total	5 33
<i>Manitoba.</i>				
Selkirk.....	J. A. Hunt.....	May 3, 1912.	25	
Victoria Beach.....				

RECAPITULATION.

Wharfage.		Harbour Dues.
\$ cts.		\$ cts.
4,198 68	Ontario.	
955 17	Montreal District ...	
6,784 96	Quebec District.	147 50
63,974 66	New Brunswick.....	4 50
6,021 69	Nova Scotia..	961 98
3,337 63	Prince Edward Island.....	
	Manitoba ..	
3 35	British Columbia.....	240 50
85,276 14	Total.....	1,354 48

8 GEORGE V, A. 1918

STATEMENT of the Leases of Wharves, Piers or Breakwaters, under the control of the Minister of Marine and Fisheries, and of the conditions of these Leases as issued under Chapter 17 of the Statutes of 1909, by the said Minister.

Locality.	Period.
Cap Bald, N.B., rent of space on C.G. wharf.	Yearly from 1916.
Lameque, N.B., rent of warehouse on wharf.	Three years from 1916.
L'Islet, P.Q.	" " 1916.
St. Nicholas, P.Q.	" " 1916.
Cap aux Corbeaux, P.Q.	} Yearly from 1916.
Bale St. Paul.	
Les Eboulements	
St. Irénée.	
Murray Bay.	
Cap à l'Aigle.	
St. Simeon.	
Rivière du Loup.	
Tadoussac.	
Anse St. Jean.	
St. Alphonse.	
Chicoutimi.	
Pointe Esquimaux.	
Goderich Sand beach.	Twenty-one years from 1907.
Windermere, Ont.	Three years from 1915.
Goderich, rent of two sections.	Yearly from 1913.
Midland, Ont.	Three years from 1915.
Windsor, Ont.	Yearly from 1916.
Huntsville, Ont.	Three years form 1911, renewed yearly from 1914.

STATEMENT of Expenditure of Marine Branch from Confederation to March 31, 1917.

1868	\$ 371,070 56	1893	\$ 898,720 03
1869	360,899 90	1894	905,654 34
1870	367,189 11	1895	895,828 28
1871	389,537 12	1896	793,634 49
1872	518,958 49	1897	867,772 90
1873	706,817 92	1898	856,192 50
1874	845,150 90	1899	1,102,601 90
1875	844,586 09	1900	982,561 97
1876	970,146 27	1901	1,029,925 32
1877	820,054 38	1902	1,501,618 88
1878	786,156 23	1903	1,671,494 77
1879	785,359 47	1904	2,150,940 31
1880	723,390 89	1905	4,747,722 81
1881	761,730 62	1906	5,066,252 66
1882	774,831 53	1907	3,637,599 82
1883	825,010 82	1908	5,374,774 18
1884	927,241 61	1909	4,692,806 85
1885	1,129,901 14	1910	4,197,420 24
1886	980,120 59	1911-12	4,911,140 67
1887	917,557 31	1912-13	5,213,223 55
1888	883,250 85	1913-14	5,828,027 37
1889	1,023,801 34	1914-15	6,202,908 16
1890	807,417 53	1915-16	5,621,610 88
1891	885,410 11	1916-17	4,768,784 12
1892	861,426 80		

SESSIONAL PAPER No. 21

APPENDIX No. 6.

METEOROLOGICAL SERVICE.

TORONTO, May 11, 1917.

The Deputy Minister of Marine,
Ottawa, Ont.

SIR,—I have the honour to submit the forty-sixth annual report of the Meteorological Service for the fiscal year ended March 31, 1917.

Meteorological returns have been received at the central office from 582 stations, inclusive of 42 new climatological stations, but exclusive of 110 storm signal stations.

The following are the new stations, together with the names of the observers:—

Hudson Hope, B.C.—J. A. Macdougall.	Rosetown, Sask.—J. H. Macey.
Anyox, B.C.—F. E. Patton.	Nisbit, Sask.—A. Williscraft.
Michel, B.C.—Crow's Nest Pass Coal Company.	Smiley, Sask.—J. T. Vallance.
Castlegar, B.C.—Arthur E. Pittaway.	Tramping Lake, Sask.—Fred. P. Henwood.
Ioco, B.C.—A. Clarke.	Weyburn, Sask.—E. Meredith.
Surf Inlet, B.C.—A. Trott.	Durban, Man.—J. A. McDonald.
Saanich Mountain—T. T. Hutchinson.	Pine River, Man.—J. I. Hyalmarson.
Van Anda, B.C.—W. Kirkness.	Birtle, Man.—C. J. Darrell.
Lillooet, B.C.—W. B. French.	Roblin, Man.—F. W. Williams.
Lytton, B.C.—A. Stevenson.	Leamington, Ont.—B. E. Ellis.
Swanson Bay, B.C.—C. E. Burrows.	Capreol, Ont.—P. H. Fox.
Morrissey, B.C.—Lieut. R. Dunbar Abbott.	Lakefield, Ont.—Rev. H. Britten.
Copper Mountain—Wilfred E. Freeman.	Eugenia, Ont.—L. Latimer.
Twin Butte, Alta.—H. H. Hanson.	Beeton, Ont.—J. A. Swan.
Gem, Alta.—C. Orleans.	Michipicoten Falls—G. F. Detweiler.
Argyle, Alta.—Wm. M. Fleming.	Armagh, Que.—Dr. A. Angers.
Moose Mountain, Sask.—H. J. M. White.	Kenogami, Que.—Price Bros. & Company.
Surbiton, Sask.—W. F. Hopkins.	Saultnierville, N.S.—Miss A. A. Haines.
Duval, Sask.—W. E. Turner.	Collegeville, N.S.—Alexander Costey.
Aneroid, Sask.—R. B. Lloyd.	Kedgemakooge, N.S.—A. B. Shirreff.
Ravenscrag, Sask.—A. T. Phillips.	Frizzleton, N.S.—John D. Crowdis.

For various duties in connection with the service 375 persons chiefly observers, have been in receipt of pay, and of this number, thirty-four were employed in the central office.

In my report of last year it was pointed out that application for data regarding the rainfall over the watersheds of rivers from which it is desired to obtain electrical power, had steadily increased, and during the year just closed the demand for such information has become still more insistent. With a view of obtaining these very necessary data with the smallest number of stations, a large map of the Dominion is used and pins have been placed at all points having meteorological stations, and it is known exactly what parts of the country are sufficiently served, and what parts are lacking the requisite stations. There are still large districts void of any observing stations, but progress is being made in filling the gaps.

CENTRAL OFFICE.

Since my last report the office has lost a valuable officer in the person of Lieut.-Colonel W. D. Allan, 3rd Battalion, C.E.F., who after two years service at the front died on October 1, from the effect of wounds received some months previously.

The office has also lost the services of R. W. Mills who was in charge of Agricultural Meteorology and his position has not yet been filled. A vacancy occurred in

8 GEORGE V, A. 1918

June with the resignation of R. H. Ellard whose position has since been held successively by T. Maguire and A. F. Allen, returned soldiers.

The forecast branch of the office remains much undermanned, and as in the previous year the forecasts and storm warnings have all been issued, either by the Director or Assistant Director and one other assistant. Lieut.-Colonel Allan was a member of this branch, and his loss together with the resignation in quick succession of two others, has led to this condition, which as far as can be seen, cannot be remedied until after the war, when it will be possible to secure young men with university qualifications.

The daily forecasts based on observations taken twice daily at 8 a.m. and 8 p.m., 75th Meridian time, throughout the continent, have been issued regularly at about 10 a.m. and 10 p.m. and are disseminated very widely in all the provinces; indeed, it may now be said, that there is no place in the Dominion reached by the telegraph which cannot receive the forecasts if attention be called to the fact, that they are not being received.

The percentage of verification has been 86.3 per cent.

There are now 110 storm signal display stations, and every endeavour has been exerted to increase the accuracy of the warnings; and while both failure to warn and warning without fulfilment occasionally occur, there can be no doubt that much shipping is saved annually by the warnings.

The following is a brief synopsis of the facts regarding storms and the warnings of the past year.

From the beginning of April until well on in October, there was a very marked absence of storms from the Great Lakes to the Maritime Provinces; in fact the whole fiscal year from April 1, 1916, to March 31, 1917, was remarkably free from gales.

There was a summer storm on the 6th of June on the Great Lakes, the winds reaching the force in many localities of a fresh gale, also in the gulf of St. Lawrence the winds attained to gale force on the 3rd of July, and again on the 21st of the same month. The latter storm was experienced quite generally in the Maritime Provinces. The second and third decades of October were the most stormy periods of the year. The first heavy autumn gale occurred over the Great Lakes on the 13th of October, attended by unusually early heavy local snowfalls followed by fresh to heavy gales on the 16th, 20th and 25th. These four gales all spread to the Maritime Provinces, but they were not as heavy there as on the Great Lakes. There was only one heavy gale recorded in November, and this was general from the Great Lakes to our Atlantic coast. On the 6th of December a heavy gale prevailed on the Great Lakes and after this navigation was closed.

On the 6th, 12th, 15th and 22nd of December there were fresh to heavy gales in the Maritime Provinces. In January only two fresh gales were experienced on our Atlantic coast, but one in February, and two in March. The storm warnings as a whole were highly satisfactory, gales seldom occurred which were not warned, and there were only a few instances where warnings were issued and that there were not gales subsequently. The percentage of verification for all the warnings issued was 91.0 per cent.

PUBLICATIONS.

In the past, the service has published an annual climatological report and a monthly weather review, but beginning with January 1916, these two issues have been merged into one. The Monthly Review, now entitled "The Monthly Record of Meteorological Observations" has been enlarged to contain all meteorological data obtainable and in future, the monthly issues will, at the close of the year be bound into one volume which will then form the annual climatological report of the service. The plan will insure the prompt publication of all meteorological data. The monthly weather map which is issued after the close of each month has been published regu-

SESSIONAL PAPER No. 21

larly throughout the year, and continues to be most acceptable to boards of trade and grain exchanges throughout the Dominion, and also to the large number of voluntary observers, who like to receive something tangible in exchange for the very valuable services they render the country in furnishing weather records without remuneration.

The daily map has also been published in Toronto without break throughout the year, on Sundays as well as week days. The daily issue is 380 copies many of which are distributed by hand to business firms in Toronto, and posted quite freely in frames in various parts of the city, while the greater number go to colleges and schools, both in Toronto and in other parts of Canada, where they are regarded as being of high educational value.

These publications have been issued as follows: Annual Report 540 copies; Toronto Year Book 136 copies; Monthly Record 569 copies each month; Monthly Map 600 copies each month; Weather Map 361 copies daily. Publications have been received in the library from 190 meteorological services, observatories, and government departments in the various countries, exclusive of Germany, Austria, Russia, Belgium, Roumania and Bulgaria. While these publications are in the majority of cases either daily, weekly or monthly, each year's issue has been counted as a unit, hence the total number of parcels received by mail is very large.

INSPECTION OF STATIONS 1916-1917.

The following stations were visited during the year by inspectors of this service: Vancouver, Cochrane, North Bay, Stonecliff, Kingston, Midland, Port McNichol (twice), Beeton, Paris (twice), Brantford, Owen Sound, Southampton, Port Dover, Digby, Liverpool, Lunenburg, Yarmouth, Montreal, Long Point, Tignish, Summerside, Beach Point, Portage la Prairie, Hubbard, Saskatoon, Biggar, Lloydminster, Peace River, Graham, Prince Albert, Battleford, The Pas, Pt. Nelson, Split Lake, Quebec, Charlottetown, Pt. Escuminac, Halifax, Truro, Wolfville, St. John, Georgetown, Woodstock, Grand Falls, Edmundston, Saulnierville.

PHYSICS BRANCH.

Balloons with self-recording instruments for upper air investigation were sent up from Woodstock on the international days throughout the year, but the recoveries have not been good, only 10 out of 23 having been found during 1916.

The particulars of those recovered are given in the following table:—

Date.	Greatest height.	Temperature at greatest height.	Height of Stratosphere.	Temperature at base of Stratosphere.	Remarks.
February 2	miles. 11.9	F. -78°	miles. 8.1	F. -69°	
March 2.....	2.8	- 6			Did not reach stratosphere.
May 10.....	10.0	-83	7.9	-84	
June 8. . . .	9.6	-58	6.5	-58	
September 5. . .	10.6	-86	9.8	-92	
November 5. . . .	8.7	-78	8.1	-78	
November 7.....	13.6	-66	10.1	-77	Highest ascent obtained in Canada. Did not reach stratosphere.
November 9.....	6.8	-60			
1917. February 8.....	8.8	-66	5.3	-71	

8 GEORGE V, A. 1918

It would appear that the balloons now used reach a greater height, or else develop small leaks and then in either case drift farther than do those obtained from Europe, and are lost in the unsettled parts of the country.

The supply of instruments from England was exhausted during the year, and it thus became a necessity either to give up the work or make the instruments here. The latter course was adopted and all the instruments required in this work can be made in the office.

Hydrogen has been made from calcium hydride which was only obtainable in Germany. The supply on hand when the war broke out was sufficient to last for some time, but steps were taken to obtain hydrogen by other means when this supply became exhausted. Fortunately there is now a large hydrogen plant in Toronto where very pure hydrogen is made by electrolysis, and the company have very kindly agreed to supply the requirements of the office. The Meteorological Office is thus in the fortunate position of being entirely independent of foreign sources for the supplies required for balloon work.

The development of aviation is creating a demand for a knowledge of the atmosphere, and the National Advisory Council of the United States is advocating an extensive series of observations to obtain this information. Its importance is just as great to Canada as to the United States, and a similar survey should be carried out in Canada. Balloons are being sent out in Toronto for the work, but the city is a poor place for such work owing to the excessive smoke.

At the request of the Royal Flying Corps, Mr. Patterson, Physicist in the department, is giving a course of lectures to the cadets on meteorology with special reference to aviation.

Barograph and Thermograph.—The barograph and thermograph for recording the pressure and temperature of the air on the top of Sulphur mountain at Banff, have been put in working order, but they cannot be installed until a cable is placed between the two places.

Earth Temperature.—Progress has been made with the recording apparatus for the measurement of earth temperatures, and it is hoped that a set of five or six platinum thermometers automatically recording the earth temperature to within less than 0.1° Cent. will be installed during the summer.

Electrical Potential of the Air.—The polonium used for the collector became exhausted, and was replaced by a radioactive paint of good intensity, and is working very satisfactorily.

Radiation.—The Callendar Sunshine Recorder has been in operation throughout the year and observations were taken with the Angstrom Pyrheliometer whenever the sky was sufficiently clear. A new form of sunshine receiver for the Callendar instrument has been constructed and is now being tested.

Evaporation.—Observations on evaporation were made throughout the year; during the summer by measuring the change in the water level from day to day, and in winter by weighing a pan of ice or water. The excessive cost of material and the scarcity of labour made it advisable to postpone the construction of new evaporation stations.

MAGNETIC OBSERVATIONS.

During the fiscal year ending March 31, 1917, the photographic instruments which record the changes in magnetic force at Agincourt near Toronto, were maintained in operation without any material loss. The preliminary results obtained from a first reduction of these records are published in the Journal of the Royal

SESSIONAL PAPER No. 21

Astronomical Society of Canada. Beginning with the year 1914, the final reduction and analysis of the results of magnetic observations are published under separate cover, instead of being included in the annual meteorological report as an appendix. The 1914 results appeared in 1916 and the 1915 results are now in the hands of the printer. It is expected that these results will be available for the magnetic investigator much sooner than formerly.

Progress is being made on the computation and compilation of the results of observations for the years 1872 to 1902 inclusive, and these will be published shortly.

During the year the index corrections for 100 magnets attached to surveyors' transits were determined and supplied to the Surveyor General, and assistance was given to four surveyors from his department in standardizing their total force instruments both before and after their season's field work.

A magnetic observatory for the recording of changes in declination was established at Meanook, Alberta, in July by Mr. Jackson, and instructions were given to Mr. H. E. Cook, who was appointed as observer.

A summary of results obtained at both Agincourt, Ontario, and Meanook, Alberta, are published in both the transactions of the Royal Society of Canada and the Journal of the Royal Astronomical Society of Canada.

•
TIME SERVICE.

During the year, sixty-four determinations for time have been made by transit of stars in the meridian with the 3-inch transit instrument.

The positions of the stars have been taken mostly from the American Ephemeris and the British Nautical Almanac. The collimation error of the transit instrument, as in former years, has been chiefly determined by reversal on Polaris, reversal on the cross wires in the collimating telescope, and occasionally in conjunction with that of the instrumental azimuth by star transits in reverse position of the axis, using the method of least squares in their computation.

Time has been given over the telegraph and telephone lines to all inquirers, and the comparison and regulation of chronometers and watches, both sidereal and mean, has been carried on throughout the year.

The performance of the clocks has been satisfactory. The magneto clock, with its synchronizing system and secondary clocks, has been in operation during the year and has performed its work well. A new and improved synchronizing system is about to be installed. This system will require only one armature for each clock synchronized instead of five as at present, and will also effect a great saving in doing away with all battery power, the magneto current being used for synchronizing purposes. There will be no sparking at contact points, as these are made and broken before and after the passage of the magneto current, which is instantaneous.

The usual 11.55 a.m. signal on the fire-alarm signal has been continued throughout the year.

Time has been given weekly to the magnetic observatory at Agincourt.

The time exchanges between Toronto and Quebec, Montreal and St. John, N.B., have been made as usual, being recorded on the chronographs at Toronto, Montreal, and St. John.

The errors of the clocks have been computed from the latest observations.

8 GEORGE V, A. 1918

The following table will show the differences between the times at the several observatories, and that at Toronto. The sign + indicates slow of Toronto.

Date.	Montreal.	Quebec.	St. John.
1916.	Seconds.	Seconds.	Seconds.
April 7.....	-0.59	-0.34	-0.39
April 28.....	-0.72	-0.70	-0.61
May 12.....	+0.84	+2.62	+1.31
May 26.....	-0.28	-0.62	-0.25
June 9.....	+0.40	+0.54	+0.58
June 30.....	-0.41	+0.46	-0.72
July 14.....	+0.61	+2.09	+0.78
August 25.....	+0.08	+0.51	+0.46
September 15.....	-0.39	-0.38	+1.08
October 27.....	-0.78	+0.25	+0.04
November 17.....	+0.33	-0.18	+0.24
December 29.....	+1.15	+2.09	+1.04
1917.			
January 19.....	-0.88	+0.55	• -0.29
March 9.....	-0.27	-0.81	-0.12
March 23.....	-0.50	+0.85	-0.41
Mean difference.....	-0.08	+0.51	+0.18
Total range.....	2.03	3.43	2.03

During the year ending March 31, 1917, the sun was observed on 129 days and drawings of spots and faculae were made on 127 days.

Full details of these observations are preserved in the records of the observatory, and are available for future investigations in connection with the probable relationship between solar and meteorological phenomena.

SEISMOLOGY.

The seismographs at Toronto, Ont., and Victoria, B.C., have been in successful operation throughout the year.

At Toronto, the total number of disturbances recorded was 115, which is 20 greater than average, whilst Victoria recorded 134, or 29 greater than average.

Of those at Toronto, 2 may be classed as large, and 2 as very large; of those at Victoria, one as medium and one as very large.

The most important of the series occurred on April 24 and 26, with earthquake centres in the Caribbean Sea district.

The disturbance of January 30, on the Toronto seismogram, was one of the largest ever recorded. Centre of this was in Kamehatka district, whilst the record of February 20 shows the amplitude of the boom swing to be almost as large as that on January 30, although the disturbance did not last as long. The contrast between Toronto and Victoria seismograms for this quake, is most striking. At Victoria the maximum swing of the boom was only 3 MM., whilst at Toronto it was over 25 MM., and occurred 17m. 44s. earlier. This earthquake was possibly submarine and of West Indian origin. As far as we know, there has not been any serious loss of life through these earthquakes, although severe shocks have been recently felt in Jamaica, some people dying indirectly from the shock.

Covering the period of 11 years, January appears to be the month in which disturbances are most pronounced.

Copies of our Canadian observations are sent to the various observatories to be used in connection with the general world survey.

SESSIONAL PAPER No. 21

PHENOLOGICAL OBSERVATIONS.

Reports of phenological observations giving dates of flowering of plants, the arrival of birds, the sowing and reaping of grain, etc., which are of value from a climatological point of view were received from an increased number of stations; and the work being purely voluntary great credit is due the observers. The collection and tabulation of these statistics is in charge of Mr. F. F. Payne. A very valuable addition to the work is contained in a report for Nova Scotia kindly supplied by the Superintendent of Education for that province. This report contains averages for slopes and regions computed from observations taken at several hundred stations. Credit is also due to the Department of Education for Saskatchewan which has kindly supplied a few phenological schedules from school teachers.

OUTSIDE STATIONS.

Victoria.—In October last Mr. E. Baynes Reed, who since 1890 had been in charge of the meteorological work of British Columbia, died after a long illness. Mr. Baynes Reed was a cultured gentleman of most charming personality, and by his death the department is deprived of the services of one who had never failed to devote his whole time and energy to the betterment of that branch of the service over which he had charge. His successor in office in British Columbia, Superintendent, is Mr. F. Napier Denison, who has since 1898 been chief assistant in the Victoria office. Mr. Denison with a staff of four, prepares bi-daily weather charts and issues forecasts for certain portions of the province, and collates the climatological data for the whole province. He also has charge of the Victoria observatory which is equipped with seismological instruments for earthquake investigation, and also with a transit instrument by means of which he obtains the time which is transmitted to the shipping by the dropping of a time ball. A full report on this observatory is contained in Appendix "C."

Edmonton.—The work of this Provincial Agency remains largely in abeyance through the continued absence of observer Holmden and his assistants at the front. Mrs. Eda Owen is the acting observer, who besides taking the daily observations, forwards all the Alberta records to Toronto for computation.

Moosejaw.—The system of chief provincial agencies for the rapid collection and collation of the meteorological data of the various provinces continues to work satisfactorily at this chief station, where all statistics regarding the climate of Saskatchewan may be obtained at the Meteorological office.

St. John, N.B.—The Superintendent of this meteorological station is now acting as chief observer for the Maritime Provinces, and all reports from stations in the three provinces are sent to the St. John observatory to be collated and prepared for publication, and copies of all climatic records are there kept for reference. A report on this observatory is given in Appendix "B."

Quebec.—See Appendix "A."

R. F. STUPART,
Director.

8 GEORGE V, A. 1918

APPENDIX "A."

QUEBEC, April 26, 1917.

Sir FREDERIC STUPART,
Director, Meteorological Service,
Toronto.

SIR,—I have the honour to submit my annual report for the year ending March 31, 1917.

The correct time has been given as usual by means of the telephone in and outside the city, and to the shipping during the navigation season, by means of the time ball and also by wireless telegraph to vessels going up and down the river St. Lawrence.

As suggested in previous reports, a new time ball was erected during the winter on the "Cavalier" building near the King's bastion at the citadel, and will be ready for the opening of navigation. It will be a great improvement on the old ball, as it will be visible from nearly all parts of the port where ships are mooring.

The meteorological observations were taken daily without interruption, and the instruments were kept in good order. Special reports were furnished to the public and the military authorities on several occasions.

ARTHUR SMITH,
Director, Quebec Observatory.

APPENDIX "B."

OBSERVATORY, ST. JOHN, N.B., May 15, 1917.

Sir FREDERIC STUPART, F.R.S.C.,
Director, Canadian Meteorological Service,
Toronto, Ont.

SIR,—I have the honour to present the following report of the St. John observatory for the fiscal year ending March 31, 1917:—

Meteorological Service.

The chief station tri-daily eye readings of the instruments and observations of the various meteorological elements have been made without interruption, as in the past the morning and night observations being immediately telegraphed to Toronto. A special observation is made at noon to complete a daily report furnished the evening papers.

Records of pressure, temperature and relative humidity from autographic recording instruments have been tabulated for every hour throughout the year.

Owing to the elevation of a building to the southward it was necessary to install the sunshine recorder on the tower to obtain a free and unobstructed exposure at the time of the winter solstice.

All instruments, including the electrical and autographic recorders, are in excellent condition.

The anemograph records of wind direction and velocity made here as well as those received weekly from the wind station at Point Lepreau, have been hourly tabulated and the monthly analysis abstracted. The anemometers at both places are frequently changed and cleaned to ensure best results.

SESSIONAL PAPER No. 21

Weather Bulletin.

The morning weather bulletin, when received at the Western Union from the Central Office, is promptly telephoned to the observatory, where it is printed on a rotary duplicating machine and immediately distributed through the mails, displayed in public places, and published in the afternoon newspapers. This bulletin is of exceptional value to various commercial, shipping, and personal interests. The ever-increasing number of requests for information from the official records by telephone, letter and personal calls have been promptly complied with. Signed copies to further the settlement of claims are frequently supplied. Extended statistics of precipitation, temperature, wind velocity, and direction as well as comparative hourly barometer readings have been made for engineers and others in prospective survey work.

The returns received monthly from all Maritime Provinces observers have been carefully checked and in most cases sums and means values computed. After the necessary abstracts have been copied in our office registers these returns are forwarded to the central office. The statistics and climatological records from the observers' reports are immediately available to those asking for data covering different points in these provinces. To increase the value of these statistics I would respectfully urge the establishment of more rain-fall and temperature stations in the province of New Brunswick.

The press, as heretofore, continues to make use of this office especially at times of severe storms or during the occurrence of abnormal conditions.

Time service of the Maritime Provinces.

Star observations for determination of clock errors and rates have been made on available nights with the Troughton & Simms meridian telescope. The impersonal micrometer method of observing has been used entirely, the observations and clock comparisons being recorded on the chronograph in the usual manner.

The mean time transmitting clock, chronograph and various electrical connections have been maintained in good condition. The primary sidereal clock mounted in the basement clock room and run under constant pressure and temperature, continues to give most satisfactory results. The Kullberg sidereal is used as the observing clock, comparisons with the primary sidereal being made on the chronograph about the middle of the set of star observations.

The daily time signals regularly transmitted are well known throughout the Maritime Provinces and continue to be most useful to navigators, railways and the general public. Practically all the timepieces of this section of the Dominion are corrected by our standard clock.

The time balls at Halifax and St. John have been dropped each week day at 1 p.m. Atlantic standard time with but a very few exceptions, failure being caused by broken overhead wires. The master clock in Halifax has been synchronized daily by signal from our transmitting clock at 10 a.m. If owing to wire trouble, the signal does not reach Halifax at that time, it is repeated at the following hour.

The time signal sent from this observatory is distributed by wire to most of the principal watch and chronometer adjusters in Halifax as well as to the Admiralty dockyard, Western Union Cable dock, and the Nova Scotia Telephone Co., special arrangement being made locally at the expense of those receiving the signal. At other points in the Maritime Provinces the Canadian Government Railways have connected their watch inspectors by loop lines to receive the time signal.

In St. John the system of hourly synchronizing tower, street and office clocks continues to give most useful and satisfactory results. The special wire for this purpose direct from the observation master clock to the local telephone office, auto-

8 GEORGE V, A. 1918

matically connects with the clock line relays. A nominal charge is made by the Telephone Company for wire service and maintenance. This useful and reliable service available to the general public for comparison of their timepieces is highly appreciated. Time is also transmitted upon request through the telephone, the beats of our standard clock by relay being audible through the telephone receivers.

D. L. HUTCHINSON,

Director, St. John Observatory.

APPENDIX "C"

VICTORIA, B.C., May 7, 1917.

Sir FREDERIC STUPART,
Director, Meteorological Service,
Toronto, Ont.

SIR,—I have the honour to submit the following report upon the observatory for the fiscal year ending March 31, 1917.

During the past year the regular meteorological observations have been taken here three times a day. The weather forecasts derived from the synoptic weather charts made out daily, have been issued regularly both night and morning. These are published in the press and special bulletins are posted both here and on the lower mainland. I am pleased to state that the percentage of verifications of these shows an improvement, and for the year is a little over 87 per cent. Weather forecasts for the Kamloops district have also been regularly made, but not yet posted or published there. The percentage of verification was 85. It is hoped that during the coming year arrangements for publishing these may be completed and also for the Kootenay district.

Storm warnings have been issued and signals displayed here and at Vancouver and Nanaimo, and further details telephoned those interested by our agents at these centres. These warnings are greatly appreciated particularly by the owners of small craft plying in the straits of Juan de Fuca and Georgia.

Weekly and monthly weather reports obtained from our British Columbia telegraph stations are regularly published in the press of the province.

During the summer months special weather forecasts were again furnished the Provincial Forestry Department, respecting the advent of hot spells and dry winds, which may cause destructive forest fires if not checked in time.

During the past year the monthly reports have been received, checked, entered in our register, and mailed to your office, for 11 First Class Stations, 100 giving temperature and precipitation, and 24 reporting precipitation alone.

Since January 1, 1917, the Provincial Comptroller of Water Rights, has kindly permitted this office to enter the monthly weather reports received from their stations in the province in our register. This gives us additional weather data from 10 temperature and precipitation stations, and 60 reporting precipitation alone. In return, this office allows the above department access to all our British Columbia data. By this beneficial exchange our department has on file for reference here and at Toronto valuable meteorological data from about 200 stations in British Columbia.

Time Service

The transit telescope and its mounting has proved very satisfactory throughout the year. Star transits have been taken for time on 75 nights, or upon an average of every fifth night. The rates of the two chronometers in use here have been steady, and the time error for the Time Ball service, etc., seldom exceeds one-half second and

SESSIONAL PAPER No. 21

usually ranges from one to five-tenths of a second. The time ball on one of our highest city buildings, has proved very satisfactory, and is used as the standard for setting chronometers, clocks and factory whistles, and is of practical benefit to shipping extending to the outer docks. By means of a special phone connection in the time room the time is frequently furnished by phone to the military camps, forts, the Esquimalt naval yard, etc. I am pleased to state that at the close of this year arrangements have been made with Mr. Haughton, District Superintendent of the Dominion Radio Telegraph Service, whereby each morning, including Sundays, I am able to send at ten o'clock from my telegraph key here, wireless time signals to the other radiotelegraph stations, through the adjoining Gonzales Heights wireless station. I am now designing an automatic time sender, which when completed will send the international time letters for three minutes each day. The time error of this instrument will probably not exceed one-tenth of a second. The time will then be furnished all shipping within a radius of about 200 miles.

Seismology.

The seismographs during the year have given continuous and perfect records, and whereas 108 quakes were recorded in the previous year, the number this year increased to 126, or a monthly average of about 10. The greatest monthly number (17) occurred in September and the smallest number (5) occurred in May and July.

The slow daily movements of these pendulums both from east to west and north to south have been observed and tabulated, and during this year the results obtained, indicate abnormal movements. The maximum easterly swing which usually occurs in June was reached this year in April, and the maximum northerly movement occurred in December instead of in the usual months of March or April. The minute and short period seismic waves termed "microseisms" have this year been almost entirely absent from the instrument recording the vertical movements of the earth.

Last November our service in this province suffered a severe loss in the death of Mr. E. Baynes Reed, who from 1890 to 1898 was in charge of the Esquimalt Meteorological station, and later the Victoria office, and all British Columbia reporting stations, which under his able supervision were started in numerous parts of the province. In conclusion I would respectfully urge that whereas Mr. Shaw, of London, Eng., has perfected and has had critically tested an improved form of seismograph, equal to or better than any made in Europe, that two of these instruments be purchased for this observatory, in place of those ordered in 1914, but not received.

Accurate mean time and sidereal clocks are required, also another chronometer (small and portable). A chronograph for star transit and time comparisons is required. This I have designed and can construct for a moderate sum.

F. NAPIER DENISON,

Director.

Gonzales Heights Observatory,
Victoria, B.C.

APPENDIX No. 7.

ANNUAL REPORT OF THE MEDICAL SUPERINTENDENT OF THE MARINE HOSPITAL SERVICE FOR THE FISCAL YEAR 1916-17.

SICK AND DISTRESSED MARINERS.

Under the provisions of the Canada Shipping Act, Chapter 113, Part 5, Sec. 384, R.S. dues of 1½ cent per ton registered tonnage, are levied on every vessel entering any port of the Province of Quebec, Nova Scotia, New Brunswick, Prince Edward Island, and British Columbia. The money thus collected forms the sick mariners' fund. Vessels of the burden of 100 tons and less, pay duty once in each calendar year, and vessels of more than 100 tons, registered tonnage, three times in each year.

The officers and seamen of all fishing vessels not registered in Canada do not pay sick mariners' dues nor participate in the benefits accruing therefrom, but such vessels registered in Canada may pay dues and participate in the benefits. If such ship is of the burden of more than 100 tons, registered tonnage, such payment shall entitle, to the said rights and benefits, only the master and mariners employed upon the voyage in respect of which such payment has been made; but the payment of the said duty three times in any calendar year in respect of such ship shall entitle the master and mariners thereof to the said rights and benefits during the remainder of such year in any such port.

The Act, Chapter 113, Canadian Shipping, does not apply to the Province of Ontario, so no dues are collected from vessels in that province.

PROVINCE OF QUEBEC.

In this province sick mariners are treated at the following places, Quebec, at Jeffrey Hale hospital, Montreal; Hotel Dieu hospital, at the General hospital, and at Notre Dame hospital.

Infectious cases are treated at the Alexandra and St. Paul's hospitals.

Three Rivers, at the St. Joseph's hospital, Chicoutimi, at St. Valier's hospital, St. John, at St. John's hospital.

At the ports of Rimouski, Sorel, and Rivière du Loup sick mariners are treated in the different local hospitals, and the medical services are rendered by the port physician.

PROVINCE OF NOVA SCOTIA.

Marine hospitals are maintained at Louisburg, Lunenburg, and Sydney. In Halifax, treatment is given at the Victoria General hospital. Contagious diseases are treated at the City Isolation hospital. At Pictou, seamen are treated at the Pictou Cottage hospital, at North Sydney treatment is given at the Hamilton Memorial hospital, at Windsor, seamen are treated at the Payzant Memorial hospital, at Amherst at the Highland View hospital. For Parrsboro and vicinity, sick seamen are taken to the Cottage hospital at Springhill. At Digby, sick mariners are treated at a designated hospital and the medical services are rendered by the port physician.

SESSIONAL PAPER No. 21

PROVINCE OF BRITISH COLUMBIA.

Victoria, sick mariners are treated at St. Joseph's hospital, Vancouver, at St. Paul's hospital, Nanaimo, at Nanaimo hospital, New Westminster, at St. Mary's hospital, Prince Rupert, at the Prince Rupert general hospital, Powell river, at St. Luke's hospital.

At Chemainus and Ladysmith, sick mariners are treated in local hospitals, and the medical services are rendered by the port physician.

PROVINCE OF NEW BRUNSWICK.

A marine hospital is operated and maintained at Douglastown for sick mariners arriving at Chatham, Newcastle and vicinity.

In St. John, treatment is given at the General Public Commissioners' hospital. Campbellton at the Hotel Dieu, Moncton at the Moncton hospital.

PROVINCE OF PRINCE EDWARD ISLAND.

At Charlottetown, treatment is given at the Charlottetown and Prince Edward Island hospitals and at Summerside, at the Prince County hospital.

Where no hospital is maintained or designated in any port of the Maritime Provinces, Quebec, or British Columbia, the collector of customs is authorized to make the best provisions for sick mariners entitled to receive benefits of the fund.

STATEMENT of Receipts and Expenditures on account of "Sick and Distressed Seamen"
for the years 1907 to 1916, both inclusive.

	Receipts.	Expenditure.
	\$ cts.	\$ cts.
1907 .	44,704 59	34,362 11
1908 .	69,364 45	59,957 92
1909 .	53,732 31	66,349 26
1910 .	55,567 41	54,859 50
1911 .	60,637 11	54,779 27
1912 .	63,663 41	52,172 75
1913 .	70,540 52	54,294 71
1914 .	72,602 43	65,397 85
1915 .	72,663 80	64,950 36
1916 .		

Total amount of salaries paid to medical officers and keepers during the year 1916-17, \$15,859.44.

Number of seamen treated during 1916-17, 2,930 as compared with 3,261 for 1915-16.

Number of vessels which paid sick mariners dues 3,208, number of men employed on vessels 59,097.

8 GEORGE V, A. 1913

TABLES showing expenditure for Treatment, Board, Supplies, etc., by Provinces.

	Nova Scotia.	New Brunswick.	P. E. I.	Quebec.	British Columbia.	General account.
	\$ cts	\$ cts	\$ cts	\$ cts	\$ cts	\$ cts.
Board in hospitals and private houses.....	14,521 01	3,400 28	1,153 50	11,458 75	6,860 50	
Medical & surgical treat- ment.....	1,433 90	1,094 41	289 40	1,097 58	118 50	
Medical officers & keepers' salaries.....	9,924 50	2,534 94	625 00	1,275 00	1,500 00	
Fuel.....	816 38	128 34				
Water.....	54 00					
Light.....	148 91	26 10				
Supplies.....	311 11	22 72				
Telephone service.....	97 74	19 30				
Drugs, instruments, etc.....	129 40	55 90				
Repairs & maintenance.....	246 31					
Berths.....	17 50				25 00	
Transportation.....	100 43	5 00	8 50	158 30	37 50	
Special nursing.....	132 44		3 00	4 00		
Grants.....	300 00	200 00		800 00	400 00	
Medical assistance.....	40 00	20 00				
Printing and stationery.....						355 83
Totals.....	28,273 63	7,506 99	2,079 40	14,793 63	8,941 50	355 83
Total expenditure.....						\$61,950 98

Amount refunded by Department of Naval Service.....	\$ 744 90
“ “ “ Customs.....	98 00
\$61,950 98	\$ 842 90
842 90	
Amount of appropriations.....	\$75,000 00
Net expenditure.....	61,108 08
\$61,108 08	
Balance not expended.....	\$13,891 92

GRANTS TO SEAMEN'S INSTITUTES.

Nova Scotia.....		
Seamen's Society, Halifax.....	\$200 00	\$200 00
North Sydney Institute.....	100 00	100 00
New Brunswick.....		
Seamen's Mission Society, St. John.....	200 00	200 00
Quebec.....		
Seamen's Institutes, Montreal.....	200 00	200 00
Catholic Sailors' Club, Montreal.....	200 00	200 00
Seamen's Institute, Quebec.....	200 00	200 00
Catholic Sailors' Club, Quebec.....	200 00	200 00
British Columbia.....		
Seamen's Society, Victoria.....	200 00	200 00
Strathcona Institute, Victoria.....	200 00	200 00
Total expenditure.....		\$ 1,700 00

C. H. GODIN, M.D.

May 15, 1917

APPENDIX No. 8.

REPORT OF THE WRECK COMMISSIONER.

OTTAWA, June 11, 1917.

THE DEPUTY MINISTER OF MARINE,
Ottawa.

SIR,—I have the honour to submit my annual report of investigations and inquiries held during the fiscal year 1916-1917, into the causes of wrecks and casualties, as well as statements of wrecks and casualties as having occurred to British, Canadian, and foreign vessels, in Canadian waters, and to Canadian vessels in other waters, from January 1 to December 31, 1916.

Formal investigations during the year	37
Rehearings	2
Preliminary inquiries	11

During the calendar year 1916 there were 308 casualties reported to the department, the tonnage of same being 242,995.68, and the damage is approximately estimated at \$1,377,442, while 67 lives were lost.

Of this total number of casualties 224 were to coasting and sea-going vessels, the tonnage of same being 174,761.68, the damage to which is approximately estimated at \$937,342, and 53 lives; while 84 of the casualties were to inland vessels, the tonnage of which was 68,234, the damage to same being estimated at \$440,100, and 14 lives were lost.

In 125 cases of casualties to coasting and sea-going vessels and 39 cases of casualties to inland vessels, the amount of damage is not stated.

Sixty-eight of the casualties to coasting and sea-going vessels, made up of 19 steam and 49 sailing vessels, resulted in total losses, and of this number 50 were Canadian, 6 British, and 12 foreign vessels.

Twelve of the casualties to inland vessels resulted in total losses, and of this number 10 were Canadian and 2 foreign steam vessels.

Casualties are given under the following headings:—

Coasting and Sea-going Vessels.

Collisions	38
Foundering	25
Missing vessels	2
Miscellaneous accidents: fire, loss of sails, rigging, etc.	57
Strandings	99
Vessels sunk by submarines	3

Inland Vessels.

Collisions	30
Foundering	5
Miscellaneous accidents: fire, loss of sails, rigging, etc.	11
Strandings	38

I have the honour to be, sir,

Your obedient servant,

L. A. DEMERS,

The Deputy Minister,
Department of Marine,
Ottawa.

per H. T.,
Wreck Commissioner.

8 GEORGE V, A. 1918

STATEMENT of investigations into wrecks and casualties which occurred to Canadian, British, and Foreign vessels, held in Canada during the fiscal year 1916-1917.

Name of Ship. Official No.	Registered Port.	Remarks.
Arachne... 132832	Hartlepool, G. B....	On June 19 stranded on Little Miquelon. Formal investigation was held at Quebec on July 19 before Captain L. A. Demers, Dominion Wreck Commissioner, assisted by Commander E. G. V. Elliott and Lieut. Jas. A. Murray, acting as nautical assessors. <i>Finding.</i> —Master severely censured and reprimanded for lack of prudence in navigating vessel. First and second officers also severely reprimanded for lack of interest.
Barrister... 137486	Liverpool, G.B	On June 28, stranded off Portlock point, B.C. Formal investigation was held at Victoria on July 1, before Captain John D. Macpherson, assisted by Captains W. Wingate and R. N. Walker, acting as nautical assessors. <i>Finding.</i> —Pilot Jones committed grave error of judgment and is reprimanded. No blame attached to master or officers of vessel.
Borghild. and Oriole...	Norwegian (American).	On August 12, collided off Seal island and four of Oriole crew lost. Formal investigation was held at Halifax on August 18 and 19, before Captain L. A. Demers, Dominion Wreck Commissioner, assisted by Com'dr E. Wyatt and Capt. A. Cuthbert, acting as nautical assessors. <i>Finding.</i> —Master Sigfurd Christensen and mate O. Hole, of S.S. <i>Borghild</i> , found in default for violating Art. 16 of the Rules of the Road. Master D. J. McDonald, of S.S. <i>Oriole</i> , also found in default for violating 1st paragraph of Art. 16. Both vessels being of foreign registers, court has no jurisdiction over certificates.
Cissay	Norwegian	On April 30 stranded off St. Esprit, Cape Breton. Preliminary enquiry was held at Halifax on May 13 and 15, before Capt. F. N. Malcolm. The decision arrived at was that the stranding was due to abnormal current.
Chambly 132903	Sorel, P.Q.	On October 4 foundered at cap à la Roche. Formal investigation was held at Sorel on Nov. 8, before Capt. L. A. Demers, Dominion Wreck Commissioner, assisted by Captains Charles Lapierre and Jos. Laubert, acting as nautical assessors. <i>Finding.</i> —Master Leon Robidoux, and Second Captain Eugene Laroche, severely criticized and condemned to pay each half of cost of investigation.
Dredge No. 6..... (Cape Breton)		On January 17 foundered off Whitehead ledge, Cape Breton, and nine lives were lost. Formal investigation was held at Halifax on February 6, 7, 8, 9 & 14, before Capt. R. N. Malcolm assisted by Captains J. T. Chapman and W. C. Smith, acting as nautical assessors. <i>Finding.</i> —Accident was due 1st, to snow breaking adrift from <i>Dredge No. 6</i> , 2nd, to the <i>F. W. Roebling's</i> hawser parting; 3rd, to inability of crew of dredge to get <i>Roebling's</i> hawser on board a second time. Captain Belanger of <i>Lisgar</i> , censured for letting go his hawser from dredge. Captain Mood, of <i>Roebling</i> also censured for not slowing down as soon as <i>Lisgar</i> let go her hawser from dredge.
Ennishbrooke.... 136607	Glasgow	On May 15 stranded at Glace Bay, Cape Breton. Formal investigation was held at Sydney on May 23, before Captain L. A. Demers, Dominion Wreck Commissioner, assisted by Captains R. MacDonald and A. J. Morrison, acting as nautical assessors. <i>Finding.</i> —Master H. J. Vickers severely censured and reprimanded for lack of judgment and careless navigation. First Officer, Thor Annonsen, cautioned.

SESSIONAL PAPER No. 21

STATEMENT of investigations into wrecks and casualties which occurred to Canadian, British, and Foreign vessels, held in Canada during the fiscal year 1916-1917—*Continued.*

Name of Ship. Official No.	Registered Port.	Remarks.
English Monarch... 121292	Glasgow....	On July 25 stranded on Birds rock, gulf St. Lawrence. Formal investigation was held at Sydney on August 1st, before Captain L. A. Demers, Dominion Wreck Commissioner, assisted by Captains R. MacDona and A. J. Morrison, as nautical assessors. <i>Finding.</i> —Master R. H. Potter, severely reprimanded and censured for lack of prudence in navigating his vessel in fog; but, on account of his good record, his certificate is not dealt with.
Errington Court... 129030 and Boonton.... 131211	London.....	On December 8 collided with wharf at Halifax. Preliminary enquiry was held at Halifax on Dec. 18, before Capt. F. N. Malcolm. Formal investigation not found necessary.
Elsie Porter... 130819 and Barge Grand Dee	Sydney, N.S.... Lunenburg, N.S..	On June 6 collided in Halifax harbour. Formal investigation was held at Halifax on Jan. 20 and 24, before Captain F. N. Malcolm, assisted by Captains J. F. Chapman and D. A. Scott, acting as nautical assessors. <i>Finding.</i> —Capt. Ormistan, of <i>Scotsman</i> , towing <i>Grand Dee</i> , culpable of an error of judgment in passing so close to stern of anchored <i>Empress of Britain</i> ; <i>Elsie Porter</i> to blame for collision.
Frank C. Barnes..... 116386	Port Arthur, Ont....	On Nov. 2 foundered in lake Ontario and six lives were lost. Formal investigation was held at Toronto on July 5, before Capt. L. A. Demers, Dominion Wreck Commissioner, assisted by Captains Jas. R. Foote and Jas. McGaugh, acting as nautical assessors. <i>Finding.</i> —No one to blame, disaster attributed to unforeseen and unavoidable circumstances.
Fremona..... 93470	Dundee.....	On July 31 stranded near Anticosti island. Formal investigation was held at Quebec on Aug. 29 and 30, before Capt. L. A. Demers, Dominion Wreck Commissioner, assisted by Com'dr E. G. V. Elliott and Capt. Jas. Murray, acting as nautical assessors. <i>Finding.</i> —Accident due to error of judgment on part of master Arthur W. Melling, who is severely reprimanded for lack of caution, prudence and seamanlike carefulness.
Fordonian..... 133077	Glasgow.....	On Aug. 8 stranded near Soldier island, St. Lawrence river. Preliminary enquiry was held at Montreal on Oct. 8 and at Sorel on Nov. 18, before Captain L. A. Demers, Dominion Wreck Commissioner. The decision arrived at was that accident was caused by S.S. <i>Iberville</i> showing wrong lights. Pilot of <i>Fordonian</i> , J. B. Angers, exonerated from blame.
Fernfield..... 105704	London.....	On July 4 stranded on Battery point, Louisburg harbour. Formal investigation was held at Halifax on Aug. 21, before Captain L. A. Demers, Dominion Wreck Commissioner, assisted by Com'dr E. Wyatt and Capt. A. Cuthbert, acting as nautical assessors. <i>Finding.</i> —Stranding due to error of judgment on part of master James Brander, who is cautioned to be more careful in future in entering harbours with which he is not well acquainted.
Glenlochy..... 105990	Glasgow.....	On July 4 stranded near Sydney, Cape Breton. Formal investigation was held at Montreal on July 13, before Captain L. A. Demers, Dominion Wreck Commissioner, assisted by Captains Francis Nash and J. O. Grey, acting as nautical assessors. <i>Finding.</i> —Stranding due to error of judgment on part of Pilot E. F. Petrie, whose license was suspended for two months. Master and officers exonerated from all blame.

8 GEORGE V, A. 1918

STATEMENT of investigations into wrecks and casualties which occurred to Canadian, British, and Foreign vessels, held in Canada during the fiscal year 1916-1917—*Continued.*

Name of Ship and No.	Registered Port	Remarks.
Hawthorn 115379	Canada	On June 14 stranded in Montreal harbour. Formal investigation was held at Montreal on Aug. 4, before Capt. L. A. Demers, Dominion Wreck Commissioner, assisted by Captains Chs. Lapierre and J. O. Grey, acting as nautical assessors. <i>Finding.</i> —Pilot Aubert Naud, solely at fault and he is censured for not having adopted the proper measure to anchor vessel when fog set in.
Hochelaga 132818, and Pilot 77874	West Hartlepool... G B Quebec.	On July 19 collided near Platon, St. Lawrence river. Formal investigation was held at Montreal on Aug. 7 and 8, before Capt. L. A. Demers, Dominion Wreck Commissioner, assisted by Captains Francis Nash and Chas. Lapierre, acting as nautical assessors. <i>Finding.</i> —Collision due to error of judgment on part of both master and pilot of <i>Hochelaga</i> , W. G. Tudor and Sévère Perron, who are censured and criticized. Both captain and pilot of <i>L'Etoile</i> , Joseph Desire Boisvert and Marcel Chabot, invited collision by deliberately violating the "Rules of the Road". Master's certificate of Captain Boisvert and license of pilot Chabot are cancelled.
Hawthorn 115379	Canada	On Aug. 12 stranded near pointe Citrouille, St. Lawrence river. Formal investigation was held at Montreal on Nov. 23, before Capt. L. A. Demers, Dominion Wreck Commissioner, assisted by Captains Francis Nash and Chs. Lapierre, acting as nautical assessors. <i>Finding.</i> —Stranding due to error of judgment on part of pilot F. X. Rivard, who is condemned to pay a fine of fifty dollars and defray costs of investigation.
Hawthorn and Appleton		On Sept. 17 collided in Montreal harbour. Preliminary inquiry was held at Montreal on Sept. 22, before Captain L. A. Demers, Dominion Wreck Commissioner.
Hawthorn	British	On Nov. 19 stranded off Champlain, St. Lawrence river. Formal investigation was held at Montreal on Nov. 24, before Capt. L. A. Demers, Dominion Wreck Commissioner, assisted by Captains Francis Nash and Chs. Lapierre, acting as nautical assessors. <i>Finding.</i> —Pilot J. L. Labranche, condemned to pay cost of investigation and warned to be more cautious in future. Master Robert Arthur Seabrook censured for not having been on bridge under circumstances.
Hawthorn 115379	Canada	On January 25 stranded in bay of Fundy. Preliminary inquiry was held at Halifax on February 16, before Capt. F. N. Malcolm, formal investigation not found necessary; vessel struck a submerged object.
Hawthorn	Belgium	On Aug. 19 stranded near White Horse rock, Magdalen islands. Formal investigation was held at Halifax on Oct. 13, before Capt. L. A. Demers, Dominion Wreck Commissioner, assisted by Lieut. Com'dr. C. Adam and Captain A. J. Morrison, acting as nautical assessors. <i>Finding.</i> —Stranding due to error of judgment on part of master H. Matthews; but as court has no jurisdiction over his certificate, copy of the finding is transmitted to Belgian government to deal with the matter.

SESSIONAL PAPER No. 21

STATEMENT of investigations into wrecks and casualties which occurred to Canadian, British, and Foreign vessels, held in Canada during the fiscal year 1916-1917—*Continued.*

Name of Ship. Official No.	Registered Port.	Remarks.
Iroquois... 111855	Toronto.....	On Nov. 27 stranded on Hare island. Preliminary inquiry was held at Quebec on Nov. 29 and Montreal on Dec. 1, before Captain P. L. Lachance. A formal investigation ensued being held at Toronto on January 12, before Capt. L. A. Demers, Dominion Wreck Commissioner, assisted by Captains J. H. Foote and Jas. McGaugh, acting as nautical assessors. <i>Finding.</i> —Master John Harold Hudson, severely reprimanded for not attending to his duty. Sailing master Theophile Rou dit Desjardins has his certificate suspended for nine months, for careless navigation.
Jason..... 115297	Liverpool	On Nov. 22 stranded in Montreal harbour. Preliminary inquiry was held at Montreal on Nov. 27, before Capt. L. A. Demers, Dominion Wreck Commissioner. The decision arrived at was that contrary to orders from the pilot, tug insisted in hauling the <i>Jason</i> over to the north, causing stranding.
Kenkon Maru No. 3.....	(Japanese).	On January 12 stranded on Saturnia island, gulf of Georgia. Formal investigation was held at Mayne island on April 10 and 11, before Capt. John D. Macpherson, assisted by Captains R. Ridley and H. Parsons, acting as nautical assessors. <i>Finding.</i> —Stranding due to pilot James Edgar Butler, and as it is not his first accident, the court ordered him to pay cost of investigation. Rehearing took place at Victoria on July 26, 27, 28 and Aug. 3, before Capt. Charles Eddie, assisted by Com'dr. J. S. Shenton and Lt. Com'dr. Hugh Holme, acting as nautical assessors. <i>Finding.</i> —Stranding due to grave error of judgment on part of pilot and his license is suspended for three months.
Kalibia..... 115738	Glasgow.	On Sept. 24 stranded near Fame point. Formal investigation was held at Montreal on Oct. 5, before Capt. L. A. Demers, Dominion Wreck Commissioner, assisted by Captains Francis Nash and Charles Lapierre, acting as nautical assessors. <i>Finding.</i> —Master John Stewart, severely reprimanded for failing to take a cast of the lead when he noticed his observations were not coinciding, and for keeping his ship going full speed in the meantime; but owing to previous good record, his certificate is not dealt with.
Lucile M. Schnare..... 137886 and Wartenfels..... 139048	Lunenburg, N.S.... London.	On June 18 collided off cape Pine, Newfoundland. Formal investigation was held at Quebec on June 30, before Capt. L. A. Demers, Dominion Wreck Commissioner, assisted by Com'dr. E. G. V. Elliott and Lieut. Jas. A. Murray, acting as nautical assessors. <i>Finding.</i> —No one to blame, collision unavoidable.
Matatua..... 114599	Southampton	On July 22 stranded in St. Mary bay, Nfld. Formal investigation was held at Halifax on Sept. 14 and 15, before Capt. L. A. Demers, Dominion Wreck Commissioner, assisted by Com'dr. E. Wyatt and Lieut. R. H. Wright, acting as nautical assessors. <i>Finding.</i> —Master James Samuel Macfie, condemned for faulty navigation and his certificate is suspended for three months.
Middleham Castle..... 128049	Liverpool.....	On July 27 stranded on Matane reef, St. Lawrence river. Formal investigation was held at Montreal on Aug. 3, before Capt. L. A. Demers, Dominion Wreck Commissioner, assisted by Captains Francis Nash and J. O. Grey, acting as nautical assessors.

8 GEORGE V, A. 1918

STATEMENT of investigations into wrecks and casualties which occurred to Canadian, British, and Foreign vessels, held in Canada during the fiscal year 1916-1917—*Continued.*

Name of Ship Official No.	Registered Port.	Remarks.
Prince Rupert 129743 and Cleere 103170	Newcastle Vancouver.	<p><i>Finding.</i>—Master John A. Kelly, severely censured for venturesome navigation in unknown waters without having furnished himself with necessary information. He is cautioned to be more prudent in future.</p> <p>On Dec. 28 collided in Vancouver harbour. Formal investigation was held at Victoria on January 24, before Capt. John D. Macpherson, assisted by Captains W. Wingate and J. R. Stewart, acting as nautical assessors.</p> <p><i>Finding.</i>—Collision due to error of judgment on part of master of <i>Cleere</i>, W. N. Coughlin, who is warned to be more careful in future. Captain Stewart, one of the assessors, dissents and finds both to blame.</p> <p>Rehearing took place at Victoria on April 26, before Capt. Charles Eddie, assisted by Com'dr. J. S. Shenton and Capt. F. James, acting as nautical assessors.</p> <p><i>Finding.</i>—Collision entirely attributable to master of <i>Prince Rupert</i>, Duncan Mackenzie, in misjudging the way of his vessel prior to collision.</p>
Prince John. 128472	Prince Rupert....	<p>On January 26 stranded in Wrangle narrows, Vancouver harbour. Formal investigation was held at Vancouver on February 28, before Capt. Charles Eddie, assisted by Com'dr. J. S. Shenton and Capt. John McLeod, acting as nautical assessors.</p> <p><i>Finding.</i>—Immediate cause of stranding resulted from a slight error of judgment on part of master A. M. Davis.</p>
Queen.... 92335	Quebec....	<p>On Nov. 1, stranded in St. Catharines bay, entrance to Saguenay river. Preliminary inquiry was held at Quebec on Nov. 15 and 16, before Captain P. L. LaFrance.</p> <p>The decision arrived at was that stranding appears to have been caused by an error of judgment on part of master Arthur Deschenes, in attempting to make a landing under prevailing conditions. Formal not necessary.</p>
Rock Ferry 129419	Montreal	<p>On May 17 stranded on Main Duck island, Lake Ontario. Formal investigation was held at Montreal on June 6 and 9, before Captain L. A. Demers, Dominion Wreck Commissioner, assisted by Captains Francis Nash and J. O. Grey, acting as nautical assessors.</p> <p><i>Finding.</i>—Both master and mate disregarded the most simple precautions in navigating vessels. Certificate of master Alban Robineau is suspended for two months and that of mate Jos. Pierre Dufour for the same period.</p>
Ruby 125972	Ottawa...	<p>On Sept. 25 foundered in Lake Ontario and two lives were lost. Preliminary inquiry was held at Ottawa on Sept. 28, before Captain L. A. Demers, Dominion Wreck Commissioner.</p> <p>The decision arrived at was that no one was to blame, foundering caused by stress of weather.</p>
Hudson	..(British)	<p>On February 5 stranded and lost near Sambro island, N.S. Formal investigation was held at Halifax on February 12 and 13, before Captain F. N. Malcolm, assisted by Captains D. A. Scott and L. F. Chapman, acting as nautical assessors.</p> <p><i>Finding.</i>—Master George Hiscock severely censured for not sounding when approaching coast; but as he used his best judgment after the accident, in saving the lives of all on board, his certificate is not dealt with.</p>

SESSIONAL PAPER No. 21

STATEMENT of investigations into wrecks and casualties which occurred to Canadian, British, and Foreign vessels, held in Canada during the fiscal year 1916-1917—*Continued.*

Name of Ship. Official No.	Registered Port.	Remarks.
Sarah Radcliffe..... 105182	London	On March 23 stranded on north side of George island, Halifax harbour. Formal investigation was held at Halifax on April 1, before Capt. L. A. Demers, Dominion Wreck Commissioner, assisted by Captains John Fleming and D. C. Stuart, acting as nautical assessors. <i>Finding.</i> —Master and officers exonerated of all blame, but 1st and 2nd officers D. J. Evans and J. Greffie, cautioned to be more careful in future by taking precautionary measures.
Stormount..... 122409	Montreal.....	On June 20 stranded on Gull rock, N.S. Formal investigation was held at Halifax on June 27, before Capt. L. A. Demers, Dominion Wreck Commissioner, assisted by Lt. Com'dr. G. C. Holloway and Capt. E. Wyatt, acting as nautical assessors. <i>Finding.</i> —Stranding due to careless navigation on part of master William H. Blankler, and his certificate is suspended for six months.
Storstad..... and Huftero..... and Storstad..... and Jason..... 115297	(Norwegian). (Norwegian). (Norwegian). Liverpool.	On Sept. 7 collided in Sydney harbour, N.S. Formal investigation into this joint collision was held at Sydney on Sept. 16 and at Montreal on Sept. 22, before Capt. L. A. Demers, Dominion Wreck Commissioner, assisted by Captains A. J. Morrison and R. Macdonald, acting as nautical assessors. <i>Finding.</i> —Both masters of <i>Storstad</i> and <i>Huftero</i> to blame for collision with <i>Jason</i> and <i>Storstad</i> . Re <i>Storstad</i> and <i>Huftero</i> collision: Master of <i>Storstad</i> violated Art. 27 and Art. 29. Master of <i>Huftero</i> violated Art. 19, 22, 23, 25 and 29.
Silverdale..... 119227 and Rouville..... 126528	Sunderland .. Ottawa.	On August 16 collided at Father point. Preliminary inquiry was held at Quebec on October 17 and at Montreal on October 19, before Captain P. L. Lachance. Formal not found necessary.
Samuel Marshall..... 107426	Brockville....	On Sept. 11 stranded in Saguenay river. Formal investigation was held at Quebec on Oct. 23, before Capt. L. A. Demers, Dominion Wreck Commissioner, assisted by Captains Chs. Koenig and Thos. McGaugh, acting as nautical assessors. <i>Finding.</i> —Accident due to over-confidence of pilot Eudore Langlois, and his failure to adopt necessary measures of prudence. He is fined \$100.00 and cautioned. Master Wm. A. Tulloch, ordered to pay two-thirds of cost of investigation, and mate Charles Ross, to pay one-third of cost, both for lack of attention to duty.
Shintzu Maru.....	(Japanese)...	On Sept. 23 stranded near Fraser River Light vessel. Formal investigation was held at Victoria on Oct. 13, 14, 23 and 31, before Capt. John D. Macpherson, assisted by Captains S. W. Bucknam and C. Clarice acting as nautical assessors. <i>Finding.</i> —Accident solely due to pilot H. Robson Jones, of the Vancouver Pilotage District, who is condemned to pay all costs for the two extra days on which court had been forced to sit, through his refusal to appear to give evidence until forced to do so.
St. Winifred..... 63273	Manchester.	On Nov. 18 stranded at pointe Citrouille, St. Lawrence river. Preliminary inquiry was held at Montreal on Dec. 11, before Capt. L. A. Demers, Dominion Wreck Commissioner. No one to blame, casualty unavoidable under circumstances.

8 GEORGE V, A. 1918

STATEMENT of investigations into wrecks and casualties which occurred to Canadian, British, and Foreign vessels, held in Canada during the fiscal year 1916-1917—*Continued.*

Name of Ship. Official No.	Registered Port.	Remarks.
Sagana	(British)	On February 21 stranded near Main à Dieu passage, N.S. Formal investigation was held at Louisburg on March 16 and 21, before Captain R. Macdonald, assisted by Captains P. C. Robinson and A. C. Lewis, acting as nautical assessors. <i>Finding.</i> —Stranding due to negligence on part of master B. Travener, and his certificate is suspended for four months.
Tyne..... 111255	Glasgow	On July 23 stranded near Old Proprietor ledge, bay of Fundy. Formal investigation was held at St. John, N.B., on July 28 and 29, before Capt. L. A. Demers, Dominion Wreck Commissioner, assisted by Captains A. J. Mulcahy and Jas. Hayes, acting as nautical assessors. <i>Finding.</i> —Stranding due to error of judgment on part of master H. W. Robson, who is severely reprimanded and censured. His certificate is not dealt with on account of his honesty in giving evidence and the able manner in which he succeeded in getting his vessel from the rocks.
Turbinia.. 112201 and Primrose 94900	Hamilton Toronto.	On Aug. 13 collided near Toronto harbour. Formal investigation was held at Toronto on Sept 6, before Capt. L. A. Demers, Dominion Wreck Commissioner, assisted by Captains Jas. R. Foote and Jas. McGaugh, acting as nautical assessors. <i>Finding.</i> —Captain of <i>Turbinia</i> , B. W. Bongard, found in default for proceeding under circumstances. His certificate is suspended for a year. Captain of <i>Primrose</i> , A. Brown, found in default for violating Art. 30 and Rules 35, 37 and 38. His certificate is cancelled but Court recommends that a certificate as mate of freight steamer be granted him.
Twickenham 11278	London	On Oct. 11 collided with coal pier chute in Sydney harbour, N.S. Formal investigation was held at St. John on Oct. 31, before Captain L. A. Demers, Dominion Wreck Commissioner, assisted by Captains A. J. Mulcahy and A. B. Clifford, acting as nautical assessors. <i>Finding.</i> —Accident due to error of judgment on part of master Richard C. Craggs, who is cautioned to be more careful in future.
Valetta 11224 and Sol Bakken	Glasgow Norwegian.	On Oct. 4 collided off White island, St. Lawrence river. Formal investigation was held at Halifax on Dec. 6, before Capt. L. A. Demers, Dominion Wreck Commissioner, assisted by Comdr. E. Wyart and Capt. R. Jones, acting as nautical assessors. <i>Finding.</i> —Both vessels to blame for violation of Art. 21, 27 and 29. Chief Officer of <i>Sol Bakken</i> , Erling J. Lindboe, was remiss in his duty in not complying with the "Rules of the Road"; but as he is a foreigner, his certificate is not dealt with. Master of <i>Sol Bakken</i> was ill in bed at time of accident. The pilot, Arthur Paquet, committed a grave breach of discipline in leaving his post. He is fined \$400.00 and ordered to defray his expenses. Master of <i>Valetta</i> , Matthew Mackie, exonerated from blame. The second officer, D. Gillies, is severely criticised and reprimanded for leaving the bridge at a crucial moment. The pilot, Ernest Bernier, is found at fault: he is fined \$300.00 and ordered to defray his expenses.

SESSIONAL PAPER No. 21

STATEMENT of investigations into wrecks and casualties which occurred to Canadian, British, and Foreign vessels, held in Canada during the fiscal year 1916-1917—*Concluded.*

Name of Ship. Official No.	Registered Port.	Remarks.
W. B. Morley . . . 138093	Montreal	On June 17 stranded at foot of Plum island, St. Lawrence river. Formal investigation was held at Quebec on Nov. 17, before Capt. L. A. Demers, Dominion Wreck Commissioner, assisted by Captains Chs. Koenig and A. R. Demers, acting as nautical assessors. <i>Finding.</i> —Accident due to lack of judgment on part of pilot Geo. Perreault, who is condemned to pay cost of investigation. On account of his previous good record, his licence is not dealt with.

Summary of losses and casualties reported as having occurred to British, Canadian and Foreign vessels in Canadian waters and to Canadian vessels in other waters, from January 1 to December 31, 1916.

COASTING AND STEAMING VESSELS.

Date of casualty.	Vessel's name and number.	Age of ship, years.	Registered port.	How engaged.	Register or tonnage.	Port sailed from.	Port bound to.	Place where casualty happened.	Particulars of Casualty.	Lives lost.	Loss.
Jan. 6	Atlantic No. 1 11774	22	Prince Rupert	Wood.	850	Prince Rupert.	Prince Rupert.	Skedigate channel.	Stranded. Edward Rodal.		Part. loss. Ship, \$500.00.
Feb. 14	Arcton No. 1 112465	11	Montreal, N. S.	Schr.	99	St. Johns, Nfld.	Gibraltar.	Lat. 46° 38' N. Long. 49° 18' W.	Bulwarks carried away.		Part. loss.
Feb. 20	Adycon 112421	14	Windsor, N. S.	Schr.	256	Halifax	Halifax.	No. Atlantic. Lat. 42° 48' N. Long. 62° 52' W.	John Snelgrove. Foundered.		Total loss. \$20,000.00.
Mar. 4	A. V. Corbell 1264	7	Lunenburg, N. S.	Schr.	147	Halifax	Barbadoes.	No. Atlantic. Lat. 40° 36' N. Long. 62° 15' W.	Damaged in gale.		Part. loss.
Mar. 9	A. I. Stirling 12564	6	Parisboro	Schr.	146	Liverpool, N. S.	New Haven, Conn.	No. Atlantic. Brown's island. Mass.	Stranded		Slight damage
Mar. 16	Arcton 112421	14	Windsor, N. S.	Schr.	256	Philadelphia.	Halifax.	75 miles S. of cape Sable, N. S.	Foundered		Total loss. \$10,000.00.
April 19	Arcton Kelly 114745	4	Grimsby	Schr.	95	Prince Rupert.	Fishing Grounds.	Atlantic. Near Middleton island, gulf of Alaska.	Collided with submerged object.		Part. loss.
June 8	Arcton 112421		Seattle, Wash.	Barge.		Britannia Beach, B. C.	Tacoma, Wash.	Fraser river, gulf of Georgia.	Foundered		Total loss.
June 20	Arcton 112421	40	Digby, N. S.	Schr.	22			Off Avonport, N. S.	Foundered.		Total loss.
June 20	Arcton 112421	4	West Hartlepool	Schr.	2471	Montreal	Cork.	Landade island Maquelon.	Stranded.		Part. loss.
June 21	Arcton 12428	8	Montreal	Schr.	1,457	Quebec	Rimouski.	Quebec harbour.	Collided with Isabel Rodal. Chs. C. Hunter.		Slight damage.

SESSIONAL PAPER No. 21

July	1	Algonquin 125987	22	Montreal.	Dredge. Wood Sail	335-27	Near Rimouski.	Foundered.	Total loss.
July	29.	Albertha.... 107644	17	Lunenburg, N.S.	Schr.... Wood Sail	94	Liverpool, N.S.... Elizabeth Port.	Stranded.... L. J. Cook.	Total loss, \$1,500.00.
Aug.	28.	Arthur J. Parker. 126286	7	St. John, N.B.	Schr.... Wood Sail	118-55	Ingramport, N.S.... New York.	Sprung a leak.... Jos. Evans.	Part loss, \$500.00.
Sept.	2.	Ada Peard..... 73258	41	Fowey, Eng.	Bqte.... Wood Sail	219	Barbadoes.... St. John, N.B.	Stranded.... Jas. S. Stade.	Total loss, \$10,000.00.
Sept.	17.	Araluen. 139004	15	London....	Schr.... Steel Steam	3,533	Cardiff.... New Zealand.	Collided with <i>Huntsdale</i> . Art. Neagle.	Part loss.
Sept.	26	Avis..... 103745	22	Quebec	Schr.... Wood Sail	99-74	Gaspe..... St. Pierre Mique- lon.	Foundered.... Wilbrod Carre.	Total loss, \$3,500.00.
Oct.	1	Arneac....	28	New York.	Schr.... Wood Sail	496	Chatham, N.B.... Portland, Me.	Foundered.... C. H. Gallagher.	Total loss.
Oct.	1	Alex. Anderson...	24	New York.	Schr.... Wood Sail	725	Chatham, N.B.... Portland, Me.	Foundered.... John Carr.	Total loss.
Oct.	13	Annie Pearl. 100512	25	Moncton	Schr.... Wood Sail	40	Hall's Harbour.	Stranded....	Total loss.
Nov.	3	Ada Tower 133895	1	Parrsboro.	Schr.... Wood Sail	1,528	Glasgow.... Lisbon.	Damaged in gale.... John Cook.	Part loss, \$750.00.
Nov.	17	Ada M. Westha- ven. 130739	5	Lunenburg, N.S.	Schr.... Wood Sail	100	St. Johns, Nfld.	Lost part of cargo.... Wm. Mason.	Part loss, \$1,375.00.
Nov.	28	Arthur J. Parker 126286	7	St. John, N.B.	Schr.... Wood Sail	118	Boston.... Halifax.	Foundered.... Jos. Evans.	Total loss: Ship, \$5,000.00 Cargo, \$1,000.00
Dec.	10	Altona. 100617	22	Halifax.	Schr.... Wood Sail	28	Halifax.... Ingramport.	Stranded.... J. Dauphinee.	Total loss: Ship, \$1,000.00. Cargo, \$250.00. Part loss.
Dec.	14	Aguadilla. 111641	14	Lunenburg, N.S.	Schr.... Wood Sail	99	North Sydney,.... Carbonneau, Nfld.	Loss of Rudder.... C. E. Bennett.	Total loss.
Dec.	23	Alcaca 107657	16	Port Medway,.... N.S.	Schr.... Wood Sail	99-35	Liverpool, N.S.... Elizabeth Port, U.S.A.	Stranded.... L. J. Cook.	Total loss.
April	29.	Beatrice L. Cor- kum. 107130	17	Halifax.	Schr.... Wood Sail	81	Liverpool.... New York.	Stranded.... J. Evans.	Total loss.

STATEMENT of wrecks and casualties reported as having occurred to British, Canadian and Foreign vessels in Canadian waters and to Canadian vessels in other waters, from January 1 to December 31, 1916.—*Continued.*

COASTING AND STEAMING VESSELS—Continued

Date of Casualty	Name of Ship (Official No.)	Age of ship Years	Registered Port	How rigged.	Registered Tonnage	Port sailed from. Port bound to.	Place where Casualty happened.	Particulars of Casualty. Name of Master.	Lives lost.	Loss. Total or partial.
Jan. 26	Parrister 137486	1	Liverpool...	Schr.... Steel	2,341	Liverpool Seattle, Wash.	Near Portlock Point Lt. House, B.C.	Stranded John Richards.		Part loss.
Apr. 2	Bayview 14006	26	St. John, N.B.	Schr.... Wood	192	Louisburg Pictou.	Charlottetown P.E.I.	Strung a leak...		Part loss.
Apr. 12	Bartholomew	18	Bergen, Norway	Schr.... Steel	2,200	Herring Cove, N.B. Charbourg, France.	40 miles W.S.W. of Seal Island.	Collided with <i>Orida</i> .	4	On <i>Orida</i> . Part loss, \$900.
May 10	Blackthorn 14205	2	Liverpool, N.S.	Schr.... Wood	295	Jacksonville, Trinidad.	Lat: 19° 40' N. Long: 52° 20' W.	D. Christensen. Lost Masts, sails, Deck load.		Part loss.
May 12	Belles 69717	14	Quebec	Schr.... Sail	851	Trinidad... Liverpool.	No. Atlantic. Lat: 27° 40' N. Long: 62° 20' W., No. Atlantic.	C. H. Publicover. Damaged by gale. C. H. Parker.		Part loss.
Feb. 26	Cherrie	14	Boston	Wool Aux. Schr..	76	Boston... Fishing Grounds.	Green island, N.S.	Stranded		Total loss.
Feb. 26	Cherrie 100735	28	Vancouver, B.C.	Schr..	496	Comox, B.C. Vancouver.	Entrance to Vancouver harbour.	Collided with <i>Quadra</i> . Chs. Campbell.		Part loss.
Feb. 27	Cherrie 94738	16	St. John, N.B.	Schr.	117	St. John, N.B. Boston.	Boston harbour	Stranded... B. Lewis.		Part loss.
Mar. 4	Cherrie 147602	12	Gloucester, Mass.	Schr..	79	Gloucester. Fishing.	Lat. 58° 18' N. Long. 43° 20' W., No. Atlantic.	Damaged in gale... A. Gauvreau.	1	Part loss.
Mar. 4	Cherrie 161904	23	London, G.B.	Schr..	2,185	Cardiff... Delaware, U.S.A.	Lat. 37° N. Long. 60° 50' W., No. Atlantic.	Damaged in gale... F. Shoemack.		Part loss, \$8,000.
Mar. 6	Cherrie 121294	11	Vancouver	Schr.... Steel	793	72 Vancouver... Massett.	Digby island... Chatham sound.	Stranded A. L. Dickson.		Part loss.

SESSIONAL PAPER No. 21

April	9	C. S. Parnell... 97132	4	Quebec.	Tug.... Wood Steam Schr.... Wood Sail Steel Steam Schr.... Wood Sail	9-10	Louise basin.	Foundered..	Part loss.
Mar.	6	Cora A.....		New York.....	Wood Schr.... Wood Sail	327	Lat. 36° 42' N Long. 57° 18' W., No. Atlantic.	Foundered..... Capt. Knowlton.	Total loss.
April	30	Cissy..... 97548	24	Bergen..... Norway.	Steel Steam Schr.... Wood Sail	1,943	Havre..... Louisburg.	Stranded..... G. Hansen.	Part loss.
May	9	Coquitam... 134081	2	New Westminster.	Steel Steam Schr.... Wood Sail	921-68	Newcastle..... San Francisco.	Sprung a leak... A. W. Abbott.	Part loss. \$2,000.
June	5	Charmer... 116776	12	Vancouver....	Wood Steam Schr.... Wood Sail	8-65	Mill Creek, B.C.....	Foundered..	Total loss.
Aug.	16	Clifford J. White 126600	27	Macbias, Me..	Wood Steam Schr.... Wood Sail	259	Lobster bay, N.S....	Foundered.. John Howell.	Total loss.
Sept.	29	Charley Troop... 96759	37	St. John, N.B....	Wood Steam Schr.... Wood Sail	30-03	Walton.	Foundered.. Wm. Burgess.	Total loss. \$200.00.
Oct.	12	Coral Leaf.. 112323	4	Bridgetown.... Barbadoes.	Wood Schr.... Wood Sail	374-30	Parrsboro Roads, . N.S.	Stranded. E. Spicer.	Part loss. \$2,000.
Oct.	18	Catherine... 112233	13	St. John, N.B....	Wood Schr.... Wood Sail	196	20 S.E. by S. off Block Island, No. Atlantic.	Sails damaged.... N. A. Wilkie.	Part loss.
Oct.	26	Clara Hamilton 83174	34	Sydney, N.S....	Wood Schr.... Wood Sail	92-64	Sydney, N.S.... Crapaud, P.E.I.	Stranded. D. Prought.	Part loss.
Nov.	8	Chakawana... 130441	6	Vancouver....	Wood Gasoline Schr.... Wood Sail	30	North Vancouver...	Stranded	Slight damage.
Nov.	14	Crescendo 126596	7	Parrsboro, N.S.	Wood Schr.... Wood Sail	196	Queenstown Har- bour.	Collided with admini- strative Patrol Boat. A. E. Rafuse.	Total loss, \$20,000.
Dec.	14	Charmer. 100793	28	Victoria, B.C. . .	Wood Schr.... Iron Steam	496	First narrows.... Vancouver.	Collided with Canadian. Chs. Campbell.	Slight damage.
Dec.	14	Canadian... 122523	9	Vancouver..	Wood Schr.... Wood Sail	43-51	First narrows.... Vancouver.	Collided with Charmer. John Pynn.	Slight damage.
Dec.	28	Cleeve..... 103170	19	Vancouver....	Wood Steam Schr.... Wood Sail	59-79	First narrows.... Vancouver.	Collided with Prince Rupert. W. N. Creighton.	Slight damage.
Jan.	9	Dunure... 78858	35	Sydney, N.S....	Wood Steam Schr.... Steel Steam	176	Lat. 29 40' N... Long. 58° 39' W., No. Atlantic.	Damaged in gale... Dan. Conolly.	Part loss.
May	19	Dunedin 125496	7	Leith, Scotland.	Wood Schr.... Steel Steam	3,051	Matane Point Light Gulf St. Lawrence	Stranded H. T. Case.	Part loss.

STATEMENT OF wrecks and casualties reported as having occurred to British, Canadian and Foreign vessels in Canadian waters and to Canadian vessels in other waters, from January 1 to December 31, 1916.

COASTING AND SEA-GOING VESSELS—Continued

Date	Name of Ship Official No.	Age of Ship Year	Registered Port	How rigged Iron or wood Steam or sail.	Regis- ter Ton- nage.	Port sailed from. Port bound to.	Place where Casualty happened.	Particulars of Casualty. Name of Master.	Lives lost.	Loss. Total or partial.
June	Dorval D 12041	10	Prince Rupert	Barge. Wood Sail.	1,181	Edwardsmith Prince Rupert.	Cin rocks, B.C.	Stranded A. Grady.		Slight damage.
July	Dorval 11704	4	Swampborg	Barge. Wood Sail.	187	Swampborg Miramichi.	80 miles E by N. of Cape Race.	Collided with un- known vessel. C. Petersen.		Part loss, Ship, \$1,500
Oct	Dorval D 11704	7	Sydney, N.S.	Schute. Wood	152	Bonaire, Dutch W Indies	Lat. 34° N Long 93° W.	Damaged in gale. Geo. M. Dean.		Part loss, Ship, \$150.
Nov	Dorval D 12041	10	Prince Rupert	Barge. Wood Steam	1,181	Prince Rupert. Union Bay.	8 miles W, N. W. of Pine Island, Queen Charlotte sound.	Stranded L. Swedson.		Cargo, \$200. Total loss.
Dec	Dorval D 21478	2	Bayview, N.J.	Barge. Steel Sail	1,601	Montreal. New York.	Inhabitants Bay, N.S.	Stranded J. D. Simmons.		Part loss, \$6,000.
Dec	Dorval D 11645	13	St. Pierre, N.S.	Schute. Wood Steam	17		Lockport, N.S.	Stranded Capt Stephens.		Total loss, \$3,500.
Dec	Dorval D 10075	15	Prince, N.S.	Schute. Wood Sail	361	Nassau Puerto de Pedro, Cuba.	Lat. 27° 28' N. Long. 85° 57' W., Gulf of Mexico.	Sprung a leak L. H. Walters.		Slight damage.
Dec	Dorval D Waller	8	Montreal	Schute. Steel	1,382	South Shields. Dunkirk.	120 E. 50° 5' N. No. Atlantic	Sunk by a torpedo or a mine. W. D. Shepherd.		Total loss.
May	Dorval D 10007	2	London	Schute. Steel Steam	2,127	Quebec Hull, G.B.	Lat 46° 14' N Long. 59° 58' W., No. Atlantic.	Stranded J. R. Vickers.		Slight damage.
June	Dorval D Mary	4	Bayview	Schute. Wood Gear.	97	Boad Bay Fishing	Entrance to Chasco harbour.	Stranded M. J. Brophy.		Part loss: Ship, \$2,000. Cargo, \$300. Total loss.
June	Dorval D 10406	20	Waller	Sail.	4		Knight's inlet, B.C.	Foundered.		

SESSIONAL PAPER No. 21

July	4.	Fernfield. 105704	21	London.....	Schr.....	2,025	Plymouth, Eng..... Havre.	Louisburg harbour..	Stranded.....	Part loss.
Aug.	2.	Fred Green..... 80886	7	St. Andrews, NB.	Steam Schr.....	43	Bennett's Bay..... Avonport, N.S.	Off Parrsboro roads, N.S.	Main mast carried away.	Part loss, \$200.
July	31.	Florence..... 116506	11	Charlottetown... P.E.I.	Wood Sail Schr.....	73-64	Sydney, N.S..... Rustico, P.E.I.	Rustico.....	Stranded..... A. Doucette.	Part loss.
July	29.	Fremona..... 93470	29	Dundee.....	Schr.....	1,925-30	Leith, Scotland. Leith, Scotland.	South Point Anti- costi island.	Stranded..... A. W. McCling.	Part loss.
Aug.	8.	Fordonian..... 133077	4	Montreal.....	Steam Schr.....	1,900-28	Montreal.... Clarke City.	Lake St. Peter....	Stranded..... W. D. Campbell.	Part loss.
Aug.	14.	Falka... 130734	4	Lunenburg, N.S.	Motor Schr.....	99	Cadix..... Burgos, Nfld.	Placentia, Nfld.	Stranded... Geo. Penney.	Part loss.
Oct.	31.	Folia. 136640	9	London.....	Wood Sail Schr.....	4,210-78	Avonmouth..... Avonmouth.	Entrance to Louise basin, Quebec.	Stranded. F. J. D. Insh.	Part Loss.
Nov....		Florence E. Melan- con.	28	Weymouth, N.S.	Steel Steam	92		Off Briar island,	Stranded.....	Total loss.
Dec.	16.	Francis Cutting... 126897	27	Vancouver.....	Sail	59-79	Vancouver.... Vancouver.	First narrows... Vancouver.	Collided with <i>Transfer No 1</i> .	Slight damage.
June	4	Grace D. Chambers.	41	Boston.....	Wood Steam Schr.....	297	Boston... Liverpool, Eng.	Cranberry island Light, N.S.	Stranded. R. J. Doever. H. E. Higgins.	Part loss, \$2,000.
July	13	Gigantic.. 130464	5	Lunenburg, N.S.	Schr.....	99-03	Lahave, N.S... Fishing.	Lat. 46° 50' N... Long. 51° 40' W., No. Atlantic.	Collided with un- known vessel. Dan. Park.	Part loss.
Aug.	12.	Governor..... 137483	1	Liverpool, G.B.	Sail Schr.....	3,492-86	Havre..... Montreal.	Montreal harbour...	Collided with <i>Ocean Prince</i> .	Part loss.
Jan.	5	Hartney W. 116322	13	Parrsboro, N.S.	Steel Steam Schr.....	271	Parrsboro... New York.	New London. Conn.	Stranded... W. E. Masson.	Part loss, \$900.
Jan.	7	Hazel I. Ritey... 126012	8	Lunenburg, N.S.	Wood Sail Schr.....	92-44	Springadele, Nfld... Gloucester. Mass.	Stag harbour rock. Nfld.	Stranded Ernest Young.	Part loss.
Jan.	14	Harry Morris. 80391	31	St. John, N.B.	Schr.....	98	St. John, N.B... Goose Creek, N.B.	Goose Creek.....	Stranded W. F. Copp.	Total loss, \$900.
Jan.	17	H. R. Silver.. 122313	8	Bridgetowns... Barbadoes.	Wood Sail Schr.....	199	Sydney, N.S... Sydney, N.S.	Cape Spear cove... No. Atlantic.	Foundered.. D. Londale.	Total loss. Ship, \$10,000.. Cargo, \$3,000. Part loss.
June	14	Hawlwen.. 115379	13	Cardiff..	Schr.....	2,612	United Kingdom... United Kingdom.	Between buoys 175 M. & 173 M., St. Lawrence river.	Stranded J. Jenkins.	

STATEMENT of wrecks and casualties reported as having occurred to British, Canadian and Foreign vessels in Canadian waters and to Canadian vessels in other waters, from January 1 to December 31, 1916.

COASTING AND SEA-GOING VESSELS—Continued

Date of casualty	Name of ship or vessel	Age of ship, years	Registered Port	How rigged	Registered Tonnage	Port sailed from, Port landed to.	Place where casualty happened	Particulars of Casualty, Name of Master.	Lives lost.	Loss, Total or partial.
July 12	Hawthorn 12518	4	Wisc. Harbortown	Schr. Steel	2,601	Montreal, Sydney.	Richelieu river.	Collided with <i>L'Etouffe</i> .		Part loss.
July 24	H. B. Cassin	31	Portland, Me.	Schr. Steam	361	St. John.	Near Seal island.	Stranded W. G. Tudor.		Part loss.
July 31	Hazel Cove 85534	23	Annapolis.	Wood Schr. Sail	89	Pictou, N.S., Alberton, P.E.I.	Malpeque reef, P.E.I.	Stranded W. D. Jamieson.		Total loss.
Aug. 7	Hawthorn 115579	13	Cardiff	Schr. Wood	2,612	Montreal.	Near St. Croix bar	Stranded D. Jenkins.		Part loss.
Aug. 12	Hawthorn 96667	46	Philadelphia.	Schr. Iron	737	Perth Amboy, N.J., Halifax	W. of Yarmouth Fairway buoy, N.S.	Sprung a leak A. T. Anderson.		Total loss. Ship, \$30,000. Cargo, \$7,200.
Sept. 7	Hawthorn	12	Bergen, Norway	Schr. Steam	898	Preston, Sydney.	Off Sydney Orr pier.	Collided with <i>Storstad</i> .		Part loss.
Oct. 16	Hawthorn 125807	45	New York British boat.	Schr. Wood	290	New York, Lahave, N.S.	Lat. 42° 28' N. Long. 65° 07' W., No. Atlantic.	Foundered C. W. Publicover.		Total loss. \$2,000.
Nov. 19	Hawthorn 125807	5	London.	Schr. Steel	3,641	Havre, Montreal.	7 miles below Trois-Rivières.	Stranded R. A. Seabrook.		Part loss.
Dec. 16	Hazel 121803	10	St. John's, Nfld.	Schr. Wood	71	Burges, Nfld., No. Sydney.	No. Sydney harbour.	Stranded W. Collins.		Part loss.
Dec. 16	Hawthorn 12581	6	Barrington, N.S.	Ferry, Wood	12	Barrington, Clanton Hr.	Clarks harbour.	Stranded E. Nickerson.		Total loss. \$1,300.
Dec. 24	Hawthorn 120461	6	Larsoberg, N.S.	Schr. Gas, Wood	99	Burnie, Nfld., Corunna, Sp.	80 miles W. N.W. of Sunk by submarine. Corunna, bay of Biscay.	Sunk by submarine.		Total loss. Ship, \$17,000. Cargo, \$30,000.

SESSIONAL PAPER No. 21

Aug.	13.	Island Gem. 85547	33	Yarmouth, N.S.	Wood Steam Schr.	11	Bennett's Beach Parrsboro Roads.	Minas channel, N.S.	Stranded. D. Morrissey.	Total loss, \$500.
21—10	Aug.	19.	6	Antwerp.	Steel Steam Schr.	969	Swansea, Calais.	White Horse rock, gulf St. Lawrence.	Stranded. H. Matthews.	Part loss.
Mar.	4.	Juno.	10	Gloucester, Mass.	Wood Sail	85	Gloucester, Fishing.	Cranberry island, N.S.	Stranded. A. Doleman.	Part loss.
June	8.	James Thater. 75627	42	Boston.	Steel Schr.	266	St. John, N.B., Limerick, Ireland	Lat. 41° 42' N., Long. 59° 31' W., No. Atlantic.	Sprung a leak. C. V. Griffin.	Part loss.
Sept.	7.	Jason. 115297	15	Liverpool.	Steel Steam	4,800	Millford, Eng., Montreal.	Sydney Harbour.	Collided with <i>Storstad</i> . Wm. Denean.	Part loss.
Nov.	22.	Jason. 115297	15	Liverpool.	Steel Steam	4,800	Havre Montreal.	Montreal harbour.	Stranded. Wm. Denean.	No damage.
Dec.	14.	Jost. 126597	6	Parrsboro, N.S.	Steel Schr.	299-44	Port Williams, N.S. Havana, Cuba.	Spencer's island, N.S.	Stranded. H. H. Card.	Part loss, \$2,000.
Jan.	12.	Kenkon Maru. No. 3. 13265	27	Putani, Japan.	Wood Sail	2,256-74	Seattle, Wash., Nanaimo, B.C.	Saturnia island.	Stranded. N. Yamaguishi.	Part loss.
May	16.	Kildonian. 96988	25	Vancouver.	Steel Sloop.	52	Burrard inlet, False creek, B.C.	False creek.	Stranded. Benson Rowe.	Part loss.
Sept.	24.	Kalibia. 115738	14	Glasgow.	Steel Steam	3,149	Barry, Eng., Montreal.	Fox River, 16 miles below Fane point.	Stranded. John Stewart.	Part loss.
Dec.	15.	Kerwood. 122290	8	Yarmouth, N.S.	Steel Schr.	84	Lockeport, N.S. Fishing.	Liverpool harbour.	Loss of Anchor and head gear. R. Locke.	Part loss, \$800.
Mar.	6.	Lauretta. Francis. 134043	2	Lunenburg, N.S.	Wood Sail	95-25	Burin, Nfld. Halifax.	Point Pleasant, N.S.	Stranded. J. N. Spinagle.	Part loss, \$150.
Mar.	15.	Lawson. 125970	7	Parrsboro, N.S.	Steel Wood Sail	274	Halifax, New York.	Bug Light, Boston.	Stranded. W. J. Digon.	Part loss, \$1,500.
May	30	L. T. Whitmore. 15980	42	Rock.	Steel Wood Sail	240	Port Greville, N.S. Tralie, Ireland.	Spencers island, N.S.	Burnt. S. N. A. Knowl- ton.	Total loss. Ship, \$3,000. Cargo, \$2,500.
June	18	Lucile M. Schwartz. 137886	2 mts	Lunenburg, N.S.	Steel Wood Sail	93-34	Lunenburg, N.S., Fishing.	12 miles S.W. off Cape Race, Nfld	Collided with <i>Wartenfels</i> . A. Schmare.	1 Total loss. Ship, \$14,000. Cargo, \$2,000.
Sept.	2	Leta J. Schwartz. 130959		Lunenburg, N.S.	Steel Wood Sail	94-78	Lunenburg, N.S., Lunenburg, N.S.	Lat. 45° 38' N., Long. 54° 12' W., No. Atlantic.	Damaged in gale. John H. Schwartz.	5 Part loss, \$75.
Oct.	12	Lillie E. Melancon 122010	5	Weymouth, N.S.	Steel Wood Sail	90	Parrsboro, N.S., Digby, N.S.	Parkers Cove, N.S., Bay of Fundy.	Stranded. W. Ogilvie.	Total loss. \$3,000.

Summary of wrecks and casualties reported as having occurred to British, Canadian and Foreign vessels in Canadian waters and to Canadian vessels in other waters, from January 1 to December 31, 1916. Coasting and sea going wrecks.—*Concluded.*

COASTING AND SEA-GOING WRECKS—Continued.

Date	Name of ship Official No.	Age of ship Years	Registered Port.	How rigged Iron or wood. Steam or sail.	Regis- ter Ton- nage.	Port sailed from. Port bound to.	Place where Casualty happened.	Particulars of Casualty. Name of Master.	Lives lost.	Loss. Total or partial.
Nov. 26	Lord Kelvin 11220	13	St. John, N.B.	Full-rigged Wood	109-64	Halifax Dover.	North Atlantic.	Sprung a leak John M. Aitken.		
Nov. 26	L. M. Little 11221	13	Dagby, N.S.	Schr. Wood	34	Freepoint, Beliveau Cove.	Dartmouth ledge N.S.	Stranded		Part loss, \$500.
Dec. 16	Isabel 11222	11	Yarmouth, N.S.	Schr. Wood	14	Yarmouth Tiverton, N.S.	Little Wood island, N.S.	Stranded Chas. F. Harris.		Total loss, \$100.
Dec. 16	L. M. Little 11223	13	Yarmouth, N.S.	Schr. Wood	30-65		Lockeport harbour, N.S.	Stranded Jas. Benham.		Part loss.
Dec. 20	Lord F. Ower 107126	17	Quebec	Schr. Wood	99	New York, Halifax.	40 miles S. off Liverpool, N.S.	Foundered. Edw. Hook.		Total loss.
Dec.	Lord K. Colville 11224		American	Schr. Wood			Near Seal island	Stranded		Total loss.
Dec.	Martha McClaskey 11442	1	Lynnburg, N.S.	Schr. Wood	109		Bay of Fundy.	Sprung a leak		Total loss.
Mar. 4	Martha 11655	11	Lynnburg, N.S.	Schr. Wood	85	St. John's, Nfld Canso, N.S.	St. Pierre Miquelon.	Stranded John Elliott.		Total loss Ship, \$4,250 Cargo, \$1,000. Total loss.
July 30	Myb 12259	6	Yarmouth, N.S.	Sloop. Wood	145-96	Yarmouth Yarmouth.	4 miles N.W. off Point Prim.	Foundered. Geo. A. Baker.		Part loss.
July 30	Magpie Bell 116516	12	Lynnburg.	Boat. Wood	99	St. John's, Nfld	Lat. 36° 28' N. Long. 58° W., Mediterranean Sea.	Collided with Genoa. Herbert Reid.		Part loss.
Aug. 10	Magpie 106764	16	Porton, N.S.	Schr. Wood	190-82	Chatham, N.B. New York.	On voyage from Chatham to New York.	Sprung a leak I. A. Hopkins.		Part loss.

SESSIONAL PAPER No. 21

Aug.	27	Minia. 56768	50	London...	Schr..... Iron Steel	1,162	Halifax harbour....	Damaged by fire... James Adams.	1	Part loss. \$20,000.
Sept.	1	Maggie W...					North Sydney, Newfoundland.	Foundered.....		Total loss.
Sept.	9	Moltke.....		Genoa, Italy.....			4 miles E. off Father point.	Stranded.....		No damage.
Sept.	23	Mikado. 103703	20	Yarmouth, N.S....	Steam Schr..... Wood	48-50	Little River, N.S.. Weymouth, N.S.	Stranded. S. Cairn.		Total loss, \$5,000.
Oct.	3	Mildred.... 122314	9	Sydney, N.S.....	Steam Schr..... Wood	166	St. Johns, Nfld.... Gibraltar.	Loss of cargo.... Chs. Webber.		Part loss.
Oct.	23	Melba.....	15	St. John, N.B....	Schr..... Wood Sail	385	Garston..... Halifax.	Main gaff lost and... Foresail damaged		Part loss.
Oct.	27	Manchester Inventor. 113117	14	Manchester.....	Schr..... Steel	2,775	Manchester..... Quebec.	Collided with Arracan.		Part loss.
Nov.	16	M. M. Gardner.... 130732	6	Lunenburg.....	Steam Schr..... Wood	99	St. Johns, Nfld... Barbadoes.	Damaged in gale.... I. W. Burton. M. Tobin.		Part loss.
Dec.	13	Marion Helena.. 134407	1	Lunenburg.....	Schr..... Wood Sail	91	Twilburgate, Gi- braltar, for orders.	Damaged in gale.... C. Bourgoyne.		Part loss, \$150.
		Manxman... 93825	29	Montreal...	Schr..... Steel	385	New York..... New York.	Damaged by fire... Geo. H. Lowe.		Part loss.
Dec.	16	Mariana..... 116854	11	Shelburne, N.X...	Steam Schr..... Wood	33-44	Lockeport harbour, N.S.	Stranded..... Harry Locke.		Part loss.
Dec.	19	Mary F. Fleming. 133803	4	Lunenburg.....	Schr..... Wood Sail	94-49	Lunenburg..... New York.	Missing. Russel River.	6	Total loss. Ship, \$600. Cargo, \$500. Total loss. \$800.
Jan.	7	Nellie... 90892	27	Yarmouth, N.S...	Schr..... Wood Sail	59	Mahone Bay..... Ship Harbour.	Stranded.... F. Mitchell.		Total loss.
July	8	N. W. White..... 75627	38	Quebec.	Schr..... Wood Sail	90	Montreal..... St. Johns, Nfld.	Sprung a leak.... Thos. Lowrie.		Part loss, \$1,200.
July	26	Nellie... 107607	15	Weymouth.....	Schr..... Wood Sail	59	Porto Rico..... Turks Island.	Loss of sails..... L. F. Backhouse.		Part loss.
Sept.	30	Norwalk.....					Hadley's point, N.S	Stranded.....		Part loss.
Oct.	4	Northern Messenger. 126108	8	Lunenburg, N.S...	Schr..... Wood Sail	16-70	Harrington, P.Q.. St. Augustine.	Stranded... J. H. West.		Total loss, \$5,000.00.

STATEMENT of wrecks and casualties reported as having occurred to British, Canadian and Foreign vessels in Canadian waters and to Canadian vessels in other waters, from January 1 to December 31, 1916. Coasting and sea going wrecks.—Continued.

COASTING AND SEA-GOING WRECKS—Continued.

Date of casualty.	Name of Ship. Official No.	Age of Ship. Year	Registered Port.	How rigged. Iron or wood. Steam or sail.	Register tonnage.	Port sailed from. Port bound to.	Place where casualty happened.	Particulars of Casualty. Name of Master.	Lives lost.	Loss. Total or partial.
Oct. 20	Nord 134522	30	Sydney, N.S.	Schr..... Wood	254	Sydney St. Johns, Nfld.	St. Johns bay..... Nfld.	Flawed shaft..... J. J. Dicks.	..	Part loss.
Dec. 16	Nellie J. Banks.. 12663	7	Shelburne, N.S.	Steam Schr..... Wood	34.50		Lockeport harbour.. N.S.	Stranded..... A. Remney.	..	Part loss.
Dec. 20	North Cambrai...	9	London, G.B.	F. & A.... Iron	28	Halifax..... St. Nazaire, France.	150 miles off Chebucto head.	Lost part of cargo.. Ths. Evans.	..	Part loss.
Jan. 8	General H. 124745	9	Hull, G.B.	Steam	129.79	Vancouver. Fishing.		Missing .. F. Fredricksen.	24	Total loss.
Jan. 12	Queen of the Lake 122570	9	Newcastle.....	Steam F. & A.... Steel	5,288	Falmouth..... Montreal.	Montreal harbour...	Collided with Governor. R. Kirkwood.	..	Part loss.
Jan. 16	Pilot..... 8303	32	Quebec	Steam Wood	268.91	Rivière du Loup... Tadoussac.	Red island, river St. Lawrence.	Stranded..... A. Deschenes.	..	Total loss, \$30,000.00.
Feb. 1	Princess Maquina. 133769	9	Victoria, B.C.	Steam Schr..... Steel	978.60	Vancouver..... Vancouver.	Seymour narrows... Discovery passage B.C.	Stranded..... L. P. Locke.	..	Slight damage.
Feb. 13	Priscilla..... 111	16	St. John, N.B.	Steam Schr..... Wood	102	Parrsboro, N.S.... St. John, N.B.	Off Campo Bello.... N.B.	Filled up & rolled over. R. Newcombe.	..	Part loss, \$800.
Feb. 19	Potomac..... 102798	23	Halifax	Schr. Steel	2,472	Middleboro. Galveston, U.S.A	Entrance to Halifax. harbour.	Stranded E. C. Tredway.	..	Part loss. Ship, \$22,000. Cargo, \$28,500.
April 20	Phyllis L. Westhaver. 130828	4	Lunenburg, N.S.	Steam Schr..... Wood	99	Lunenburg..... Halifax.	Halifax harbour....	Collided with Balaena. J. Westhaver.	..	Part loss, \$2,000.00.
June 2	Princess Maquina. 133769	3	Victoria, B.C.	Steam Schr..... Steel	978.60	Vancouver..... Prince Rupert.	North Skeena pas- sage.	Stranded..... Alex. Thomson.	..	Part loss.

SESSIONAL PAPER No. 21

July	16..	Prince John..... 129472	6	Prince Rupert... B.C.	Schr..... Steel	539-81	Vancouver, B.C.... Port Simpson.	Portland canal..	Stranded..	Part loss.
Aug.	3..	Princess Maquina. 133769	3	Victoria	Schr..... Steel	978-60	Prince Rupert..... Vancouver.	Lat. 49° 20' 50" N... Long. 123° 29-00 W. Gulf of Georgia.	Stranded. J. C. Shaw.	Part loss.
Oct.	15.	Princess Alice... 130609	5	Victoria.....	Schr..... Steel	1,904	Victoria... Skagway.	Discovery passage... B.C.	Stranded. John McLeod.	Part loss.
Nov.	17..	Princess Adelaide. 126948	6	Victoria.....	Schr..... Steel	1,910	Victoria... Vancouver.	N.E. of Barnaby shoal, B.C.	Collided with <i>Colona</i> .	Slight damage.
Nov.	17..	Princess Sophia. 130620	4	Vancouver..	Schr..... Steel	1,465-94	Victoria..... Vancouver.	Vancouver harbour.	Collided with <i>Selkirk</i> .	Part loss.
Nov.	29.	Premier 207472	6	Gloucester..	Schr..... Wood	97	Gloucester... Canso, N.S.	Near Cranberry island, N.S.	Stranded A. M. Conrad.	Total loss. Ship, \$11,000. Cargo, \$2,000. Total loss.
Dec.	2.	Palatine..... 118150	12	Sarnia, Ont.....	Schr..... Sail	2,094	New York... Havre.	English channel...	Sunk by sub-marine. Geo. Patterson.	
Dec.	11.	Percy B... 133892	3	Parrsboro, N.S.	Schr..... Wood	281	Moncton..... Barbadoes.	North Atlantic. .	Lost part of deck... load. D. Morrissey.	Part loss, \$9,300.00.
Dec.	12..	Pansy..... 72316	39	Parrsboro, N.S.	Schr..... Wood	76-48	Parrsboro... Parrsboro Roads.	Parrsboro roads...	Foundered... F. C. Lake.	Total loss.
Dec.	25..	Prince Rupert... 129743	6	Newcastle-on- Tyne.	Schr..... Steel	1,626	Skagway... Vancouver.	Vancouver harbour	Collided with <i>Cleare</i> .	Part loss.
Dec.	25.	Palmette... 111725	16	Barrington.....	Schr..... Wood	98	Clark's Harbour, N.S. Gloucester.	Clark's harbour. .	Stranded... E. Nikerson.	Part loss, Ship, \$1,000. Cargo, \$50,000.
Feb.	26.	Quadra... 96899	25	Ottawa.	Schr..... Steel	165.25	Victoria Nanaimo.	Nanaimo harbour...	Collided with <i>Charmet</i> .	Part loss.
June	27	Quantock... 128505	6	Cardiff...	Schr..... Steel	2,777	Campbellton.... Campbellton.	Restigouche	Stranded..	Part loss.
June	26	Quetay... 100057	15	St. John, N.B.	Schr..... Wood	123	Belliveau Cove, N.S. Boston.	North Atlantic. .	Sprung a leak... A. Comeau.	Part loss.
Sept.	9.	Queen City... 113482	22	Victoria	Schr..... Wood	243-77	Victoria	Victoria harbour..	Damaged by fire. W. L. Gilchrist.	Part loss.
Oct.	31.	Queen..... 92335	27	Quebec.	Wood Steam	249-25	Rivière du Loup... Tadoussac.	St. Catharines bay..	Stranded. Art. Dechene.	Part loss.

8 GEORGE V, A. 1918

STATEMENT of wrecks and casualties reported as having occurred to British, Canadian and Foreign vessels in Canadian waters and to Canadian vessels in other waters, from January 1 to December 31, 1916. Coasting and sea going wrecks.—*Continued.*

COASTING AND SEA-GOING WRECKS—*Continued.*

Date of casualty.	Name of ship.	Age of ship, years.	Registered Port.	How rigged.	Register tonnage.	Port sailed from, Port bound to.	Place where casualty happened.	Particulars of casualty.	Lives lost.	Loss.
Mar. 4	Robertson 111765	59	Lanzberg, N.S.	Schr. Wood Sail	55	Ship's Harbour, N.S. Ship's Harbour.	Halifax harbour.	Stranded A. Mitchell.		Part loss, \$300.
Mar. 4	Robertson Richard 212824	1	Gloucester	Schr. Wood Sail	89	Liverpool, N.S. Fishing.	50 miles S.E. of Sable Island.	Damaged in gale. R. Wharton.		Part loss, \$800.
May 7	Robertson J. Dab. 114461	1	Bridgetown, Barbadoes	Schr. Wood Sail	198	Halifax St. Johns, Nfld.	5 miles S. E. of Jeddore head.	Damaged in gale. R. A. Lohnes.		Part loss, Ship, \$6,000. Cargo, \$6,500. Part loss.
May 10	Robertson 95265	28	Hamilton	Schr. Steel Steam	997	Quebec London.	Lat. 46° 8' N. Long. 32° 52' W. No. Atlantic.	Damaged in gale. H. A. Rowan.		Part loss.
June 2	Robertson Rhodes 141100	28	Montreal	Wood Steam	957	Sodus Point. Chicoutimi	8 miles below Chicoutimi	Stranded W. H. Ransom.		Part loss.
Oct.	Robertson		Boston				West Cape, P.E.I.	Stranded		Part loss.
Oct. 24	R. Paul 126854	5	Sorel	Sail	105.09	Montreal. Beloeil.	Sorel harbour.	Burnt. P. Beauchemin.		Total loss.
Nov. 6	Rosendale 95265	28	Hamilton.	Schr. Steel Steam	997	Middlesborough. Nantes.		Tail end shaft broken. A. R. Lee.		Part loss.
Nov. 18	Rowan 124444	9	Antecost.	Ketch. Steel	149.15	Steverton, B.C. Deep Sea.	Near Key reef, Alaska.	L. Anderson.		Total loss, Ship, \$80,000, Cargo, \$1,000. Total loss.
Dec. 25	Rowley 100275	24	Windsor, N.S.	Schr. Wood Sail	122.63	New York Annapolis.	Nantucket, Mass.	Stranded L. H. Sabean.		Total loss, \$500.00.
Jan. 17	Rowley 125061	9	Parristown, N.S.	Schr. Wood Sail	19	St. John, N.B. Advocate harbour, N.S.	Advocate beach.	Stranded H. W. McNally.		Total loss, \$500.00.

SESSIONAL PAPER No. 21

Mar.	20.	Svaland.....	25	Christiania Norway.	Iron Sail	2,212	Liverpool, G.G. New York.	Lat. 41° 1' N..... Long. 56° 10' W., No. Atlantic.	Loss of sails... L. J. Pederson.	.....	Part loss, \$90,000.00.
Mar.	20.	Silver Leaf..... 112329	13	Parrsboro, N.S.	Schr.... Wood Steam	283	Barbadoes... St. John, N.B.	Lat. 37° 30'..... Long. 68° Gulf Stream.	Damaged in gale... Geo. Rumsey.	.....	Part loss, Ship, \$600. Cargo, \$200.
Mar.	22.	Sarah Radcliffe... 105182	20	London....	Steel Steam	2,132	.....	Halifax harbour....	Stranded.....	.....	Part loss.
May	1.	Silver Queen..... 116559	1	Maitland, N.S.	Schr.... Wood Sail	134	King's Port, N.S.... Port au Prince, Haiti.	Lat. 25° 45' N..... Long. 78° 30' W., No. Atlantic.	Collided with un- known vessel. H. W. Taylor.	.....	Part loss.
May	9	Scotia Queen... 112328	13	Parrsboro, N.S.	Schr.... Wood Sail	108	Bear River, N.S.... Boston.	Keep ledge, Me...	Stranded..... Wm. Tupper.	.....	Part loss, Ship, \$1,000. Cargo, \$1,000.
June.	26.	Stormount... 122409	9	Montreal...	Schr.... Steel Steam	1,230-85	Philadelphia... Sydney, N.S.	Gull ledge, N.S.	Stranded W. H. Blackler.	.....	Total loss, \$300,000.
Aug.	12.	Sandjford...	5	(Norwegian)....	Schr.... Steel Steam	3,578	Wabana, Nfld.... Sydney, N.S.	Sydney harbour....	Stranded... E. Olsen.	.....	Part loss.
Sept.	7.	Storstad..	6	Christiania. Norway.	Schr.... Steel Steam	3,561	Sydney, N.S.... Wabana, Nfld.	Sydney harbour....	Collided with <i>Hugtero</i> . T. Anderson.	.....	Part loss.
Sept.	22.	Shintsu Maru... 13256	25	Jannes, Japan.	Schr.... Steel Steam	3,034	Singapore... Vancouver.	Canal Pass buoy... B.C.	Stranded... M. Uli.	.....	Part loss.
Oct.	4	Sollbakken.	18	Bergen, Norway.	Schr.... Steel Steam	1,662	Dieppe... Montreal.	1 mile off cape Dod, St. Lawrence river.	Collided with <i>Valette</i> . E. G. Lindlop.	.....	Part loss.
Nov.	4	Stella... 88465	23	Richibucto.	Schr.... Wood Sail	46	Charlottetown... P.E.I. Glace Bay, N.S.	Strait of Canso....	Stranded... J. V. Genoir.	.....	Part loss.
Nov.	18	Saint Winifred... 135460	4	Liverpool..	Schr.... Steel Steam	2,883	Liverpool... Montreal.	Point Citrouille... Riv. St. Law- rence.	Stranded... T. E. Hill.	.....	Slight damage.
Dec.	14	Stadia... 136166	5	Vancouver.	Wood Gas.	11-73	Vancouver... Vancouver.	Queen Charlotte sound, B.C.	Foundered... I. L. McLennen,	.....	Total loss, \$1,500.
Dec.	22	Sam Slick... 107301	18	Windsor, N.S.	.....	88-65	Parrsboro, N.S.... Digby, N.S.	Bay View,..... Digby strait.	Stranded... F. W. Clarke.	.....	Part loss.
Jan.	29	Tuladi... 126216	8	Vancouver.	Schr.... Wood Gas.	25-92	Prince Rupert... Prince Rupert.	Skidigate narrows... B.C.	Stranded... John Milken.	.....	Part loss, \$300.00.
Feb.	1.	Takatu Maru	.....	(Japanese)....	.....	.....	.....	Off cape Race....	Collided with <i>Siber Shell</i>.	.....	Total loss.
Mar.	24	Thomas Krag....	18	Bergen, Norway.	Schr.... Steel Steam	2,241	Newcastle-on-Tyne. Baltimore, U.S.A	Lat. 41° 50' N.... Long. 50° 20' W., No. Atlantic.	Damaged in gale... H. Henriksen.	.....	Part loss, \$5,000.

STATEMENT of wrecks and casualties reported as having occurred to British, Canadian and Foreign vessels in Canadian waters and to Canadian vessels in other waters, from January 1 to December 31, 1916. (Coasting and sea going wrecks.—Continued.

COASTING AND SEA-GOING WRECKS—Continued.

Date	Name of Ship. Official No.	Age of Ship. Years	Registered Port.	How rigged. Iron or wood. Steam or sail.	Regis- ter Ton- nage.	Port sailed from. Port bound to.	Place where Casualty happened.	Particulars of Casualty. Name of Master.	Lives lost.	Loss. Total or partial.
July 27	Yves 111255	16	Glasgow	Steel	2,909		Old Proprietor ledge.	Stranded.	..	Part loss.
Aug 16	T. 111261	17	St. John, N.B.	Steam F. & A.... Steel	2,159	St. Nazaire, France. Barry Eng.	St. Nazaire.....	Collided with Quay wall. J. Dalton.	..	Part loss.
Sept 19	T. 111261	17	St. John, N.B.	Steam F. & A.... Steel	2,159	St. Nazaire..... Barry.	Barry Dock.....	Propeller blades broken. J. Dalton.	..	Part loss.
Nov 1	T. 118188	9	Port of ..	Schr. Iron.	1,299	Glasgow..... Dunkirk.	Seawall light ship.	Damaged in gale.... John Manuel.	..	Part loss.
Dec 14	T. 117143	18	Vancouver.	Steam Barge.... Wood	772	Vancouver..... Newport.	First narrows, B.C.	Collided with Francis Cutting. Z. Roberts.	..	Part loss.
Dec 16	Two Sisters. . 92749	20	Sackville	Schr. Wood Sail	86	Leonovux. St. John, N.B.	Parrsboro, N.S.	Stranded P. George.	..	Part loss. Ship, \$200. Cargo, \$50.
Feb 23	V. 124475	6	Vancouver	Schr..... Steel	579	Vancouver..... Vancouver.	Vancouver harbour.	Collided with H. John Park.	..	Part loss, \$2,500.
Feb ..	V. 147003	19	St. John, N.B.	Steam	631		St. John harbour....	Burnt. .	..	Total loss.
July 9	V. 116330	12	Parrsboro, N.S.	Steam Schr..... Wood Sail	100	Clements port..... Boston.	Salisbury beach, N.H.	Stranded D. Robinson.	..	Total loss, \$3,000.
July 21	V.	50	New London.	Schr..... Wood Sail	113	Liverpool, N.S..... New York.	5 miles E. of Seal island.	Foundered..... Jos. Evans.	..	Total loss, \$1,634.
Jan 27	W. 111	33	Bridgetown.. Barbadoes.	Schr..... Wood Sail	311	Havana..... Mobile.	10 miles E. of Havana.	Stranded..... J. McDonald.	..	Total loss, \$6,000.

SESSIONAL PAPER No. 21

Mar.	11.	Winifred..... 121852	11	Lunenburg, N.S....	Schr..... Wood Sail	99 St. Johns, Nfld..... Gibraltar.	Lat. 39° 34' N..... Long. 16° 56' W., No. Atlantic. 10 miles S. of Cape Race.	Damaged in gale..... Geo. Rumney.	Part loss, Ship, \$600. Cargo, \$200. Part loss.
June	18.	Wartenfels..... 139048	13	London.....	Steel Steam	2,825 London..... Quebec.		Collided with <i>Lucile M. Schnare</i> , D. C. McKenzie.	
July	1.	Western Light..... 107764	14	Charlottetown, P.E.I.	Schr..... Wood Sail	38-68 Chatham, N. B.... North Rustico, P.E.I.	Hardies channel..... P.E.I.	Stranded..... W. Doucette.	Total loss. \$900.
July	3.	W. G. Hudson.....		(American).....	Schr.....		Shippegan gully, N.B.	Stranded.....	Part loss.
Nov.	13.	William P. Hood, 80757	36	New York.....	Schr..... Wood Sail	Norfolk, Van..... Sharpness Docks, G.B.	Lat. 51° 30' N..... Long. 15° 21' W., No. Atlantic.	Foundered..... O. Joston.	Total loss, Ship, \$40,000. Cargo, \$12,000. Part loss.
Nov.	14.	Wamarina..... 110517	16	London.....	Steel Steam	2,712 Wellington, N.Z..... San Francisco.	Vancouver harbour.	Cargo destroyed by fire. P. J. Foster.	
Nov.	14.	W. Parnell O'Hara 100543	31	Charlottetown..... P.E.I.	Schr..... Wood Sail	79 Shediac, N.B..... Malpeque, P.E.I.	Malpeque harbour.	Foundered.....	3 Total loss.
Nov.	15.	Waikawa..... 136754	9	London.....	Schr..... Steel Steam	3,590 Melbourne..... Vancouver.	Vancouver harbour.	Cargo damaged by fire. Sam. Winton.	Part loss.
Dec.	19.	William Mason.....			Schr.....		4 miles off Metagan N.S.	Foundered..... H. B. Patterson.	7 Total loss.
Dec.	27.	William Gertrude, 125967	9	Parrsboro, N.S.	Sail Schr..... Wood Sail	271 Parrsboro... Preston.	Lat. 45° N..... Long. 32° W., No. Atlantic.	Sprung a leak... J. P. Strum.	Part loss.
Nov.	22.	Zephir..... 126455	6	Sorci, P.Q.....	Steam	119	St. Francis river...	Foundered.....	Total loss, \$12,000.

INLAND WATER WRECKS.

May	1.	Aletha..... 107748	16	Kingston.....	..... Steam	90 Stella Bath.....	Bay of Quinte.....	Stranded..... Jas. Crawford.	No damage.
June	8.	Argus.....		(American).....	.....		Fraser river...	Foundered..	Total loss.
July	25.	Arthur Orr..... 107005	23	Duluth.....	Steam Steel Steam	2,117 Chicago..... Midland.	Lake Huron, Cana- dian waters.	Stranded... John Simmons.	Part loss.
Aug.	5.	Aid..... 92295	28	Ottawa.....	Tug..... Wood Steam	15-18 Rockland.....	Rockland wharf, Ottawa River.	Burnt... Thomas York.	Total loss, \$3,000.

STATEMENT of wrecks and casualties reported as having occurred to British, Canadian and Foreign vessels in Canadian waters and to Canadian vessels in other waters from January 1 to December 31, 1916. Inland Water Wrecks.

INLAND WATERS WRECKS Continued.

Date of Casualty	Name of Ship Official No.	Age of Ship Years	Registered Port	How rigged. Iron or wood. Steam or sail.	Register Ton- nage.	Port sailed from. Port bound to.	Place where Casualty happened	Particulars of Casualty. Name of Master.	Lives lost.	Loss. Total or partial.
Aug. 21	Advocate 88662	32	Montreal	Steel Steam	358-30	Montreal. Port Colborne.	Lachine canal.	In collision with <i>Fairfax and Simla</i> , J. V. Norris.		Part loss, \$2,000.
Nov. 2	A. E. Perry 131079	12	Port Arthur	Schr. Wood Sail	178-13	Port Arthur.	Thunder bay, Lake Superior.	Damaged by fire E. Perrault.		Part loss, \$7,000.
Nov. 14	Albert Y. Gowan 106355	28	Detroit	Wood Steam	176	Detroit. Montreal.	Near Sturgeon bar, St. Lawrence r.	Stranded Chas. T. Hains.		Part loss, \$1,500.
Nov. 23	Arctique 85700	31	Wallaceburg	Steam	26		Point Pelee, Lake Erie.	Stranded		Total loss.
May 23	Byron Whistler 134145	26	Montreal	Steam Wood Steam	959-47	Prie Montreal.	Soulanges canal.	Stranded Robt. O. McLeod.		Part loss, \$800.
May 24	Blackall 121849	10	Toronto	Steam	451	Hurlan Point Toronto.	Toronto harbour.	In collision with yacht, Robt. Williams.		Part loss.
June 1	Balleville 122070	11	Montreal	Steel Steam	606-69	Hamilton. Montreal.	Lake St. Louis.	Collided with <i>Dundurn</i> , W. Bloomfield.		Part loss, \$3,000.
June 8	Byron Whistler 134145	26	Montreal	Wood Steam	959-47	Montreal. Erie.	5 miles East of Morrisburg, Ont.	Stranded Robt. O. McLeod		Part loss, \$500.
June 29	Baron. 111765	15	Kingston	Schr. Wood Sail	885	Port Colborne Montreal.	Canada island, St. Lawrence r.	Stranded W. Leduc.		Part loss, \$20,000.
July 23	Briarcliff 100188	24	Collingwood	Iron and wood Steam	222	Kingston. Montreal.	1 1/2 mile East of Chateaugay Light House, Lake St. Louis.	Stranded Alex. Anderson.		No damage.
Oct. 12	Byron Whistler 134145	26	Montreal	Wood Steam	959-47	Erie, Pa. Montreal.	East end of Lachine canal.	Stranded Robt. O. McLeod		Part loss.

SESSIONAL PAPER No. 21

Mar.	18..	City of Midland. 97111	26	Collingwood...	.....	Wood Steam	664-48	.....	Collingwood har- bour.	Burnt.....	Total loss, \$60,000.
April	23..	Collingwood... 117089	8	Collingwood.....	.....	Steel Steam	3,285	Fort William... Port McNicoll.	Whitefish bay....	Stranded... John Ewart.	Part loss.
June	4..	Canobie 133826	29	Montreal.....	.....	Wood Steam	1,051	Ashtabula... Montreal.	Soulanges canal. .	Sprung a leak... Leon Prgent.	Part loss, \$2,500.00.
Sept.	6..	Corona. 103673	20	Toronto.....	.....	Paddle... Steel	648	Toronto.... Toronto.	Niagara river....	Stranded... B. A. Bonyard.	Slight damage.
June	1.	Dundurn..... 112207	24	Hamilton...	.....	Schr.... Wood	471-56	Montreal.... Kingston.	Lake St. Louis....	Collided with <i>Belleville</i> . F. Hebert.	No damage.
Oct.	21.	D. F. Filer	45	Michigan.	.....	Sail Barge... Wood	739	Buffalo...	3½ miles East of Bar Pt. Light, Lake Erie.	Stranded... John Mattison.	6 Total loss, \$8,000.
April	26..	Edmonton. 122856	10	Newcastle..	.....	Schr.... Wood	1,341	Port Colborne Fort William.	3 miles N. E. of Whitefish point, U.S.A.	Cover of air pump broken. C. R. Albinson,	Part loss.
Sept.	4	Fred Davidson... 92302	29	Collingwood...	.....	Wood Steam	29-41	Bying Inlet... Penetang.	6 miles N. of Pointe aux Barils, Geor- gian bay.	Foundered... Nap. Cloutier.	Total loss, \$6,500.
Oct.	6.	Fairview...	22	Rouses Point....	.....	Barge... Wood	147	New York... Montreal.	West end of Lachine canal.	Collided with <i>Presque Isle</i> . E. Kimberley.	Part loss.
June	27.	Glenlivet...	25	Midland...	.....	Sail	1,089	Fort William... Port McNicoll.	Little Wold Shoal... Georgian bay.	Stranded... Frank Burke.	Slight damage.
July	22	G. B. Green... 103882	20	Ottawa.	.....	Steel Steam	218-25	Britannia... Quyon.	Quyon wharf. .	Burnt. John Chertier.	4 Total loss, \$30,000.
May	16	Huron... 96425	18	New York.....	.....	Schr.... Steel	1,309	Ashtabula... Chicoutimi.	Soulanges canal....	Collided with Canal wall. H. T. Goodwin.	Part loss.
June	4	H. M. Pellatt... 114446	13	Newcastle..	.....	Steel Steam	1,037-53	Fort William... Montreal.	Welland canal....	Collided with <i>Keynote</i> . O. W. Patterson.	Part loss, \$5,000.
Aug.	16	Henry B. Haall... 138094	35	Montreal...	.....	Schr.... Wood	618-06	Montreal... Erie.	McKey Pt. Light. lake St. Francis.	Stranded... L. Duigneault.	No damage.
Aug.	23	Hamiltonian... 131052	4	Port Arthur.....	.....	Steel Steam	1,666	Clarke City... Green Bay, Wis.	1 mile E. of Iro- quois, St. Law- rence river.	Stranded... A. McIntyre.	Part loss.
Nov.	2	Hebron... 107613	17	Montreal...	.....	Wood Steam	226-55	Montreal... Cornwall.	550 feet E. of St. Gabriel Lock, Lachine canal.	Collided with <i>Laurentia</i> . J. B. Couillard.	Slight damage.
Nov.	4	Hebron... 107613	17	Montreal...	.....	Wood Steam	226-55	Cornwall... Montreal.	300 feet W. of Black Bridge, Lachine canal.	Damaged by fire Z. Leroux.	Part loss, Ship, \$5,000. Cargo, \$3,000.

SUMMARY of wrecks and casualties reported as having occurred to British, Canadian and Foreign vessels in Canadian waters and to Canadian vessels in other waters from January 1 to December 31, 1916. Inland Water Wrecks. --Continued.

INLAND WATERS WRECKS. Continued.

Date of casualty.	Name of ship Official No.	Age of Ship Years	Registered Port.	How enged Iron or wood Steam or sail.	Regis- ter Ton- nage.	Port sailed from. Port bound to.	Place where Casualty happened.	Particulars of Casualty. Name of Master.	Lives lost.	Loss. Total or partial.
Jan. 1	Edith Reed 4428	25	Pticon	Barge Wood Sail	480	Montreal. Kingston.	Lake St. Louis.	Collided with <i>Bellefleur</i> .		No damage.
Jan. 22	Edith 167755	17	Montreal.	Wood Steam	573	Montreal. Port Colborne.	Lock 12, Welland canal.	Collided with Canal gates. Jas. Roch.		Part loss.
Apr. 14	Edith 122555	9	Kingston	Yacht. Gasoline.	3		Chamanoque	Collided with <i>Yonck</i> .		Part loss.
Nov. 4	Edith 168446	18	Sarnia	Schr. Steel Steam	412	Sarnia Port William.	15 miles E. of Pas- sage island, Lake Superior	Collided with <i>Midland Prince</i> . H. C. Minnos.		Part loss.
May 23	Katichin 92299	28	Montreal	Schr. Wood Steam	381 43	Sorel Montreal.	1 miles E. of Corn- wall.	Collided with a schooner. Ant. Bonnier.		Part loss, \$1,000.
June 4	Katichin 134458	2	Newcastle-on- Tyne	Schr. Steel Steam	1,090	Montreal. Toledo.	Welland canal	Collided with <i>H. M. Pellatt</i> . Jas. Martin.		Part loss, \$2,500.
Sept. 6	Katichin 134441	4	Montreal	Steel Steam	1,254 20	Ashabula Montreal.	Lake Erie	Stranded Geo. Bunting.		Part loss.
July 29	Lakeside 60778	28	Windsor.	Steel Steam	319 68	Sault Ste Marie. Nepigon.	Nepigon Bay, Lake Superior.	Stranded F. J. Marigold.		Part loss, \$7,600.
Sept. 18	Lakeside 82778	36	Ottawa.	Wood Steam	227		Black Bay.	Stranded		Part loss.
Nov. 21	Lakeside 1444	36	Portfort	Steel Steam	360	Cleveland. Cleveland.	Lock No. 1, Welland canal.	Collided with gates M. Peterson.		Part loss.
Sept. 3	Maxwell 134888	25	Toronto	Iron Steam Steel Steam	1,267	Port William. Duluth.	Lake Superior.	Stranded J. A. Smith.		Part loss.

SESSIONAL PAPER No. 21

Sept.	Maxie.....	19	Toronto.....	Tug.....	10-63	Abitibi River.....	Foundered.....	Total loss,
	107162			Wood Steam				\$1,500.
Nov.	4 Midland Prince, 11669	9	Midland.....	Steel Steam	4,559 85 Fort William.... Midland.	35 miles E. of Pas- sage island, lake Superior.	Collided with <i>Imperial</i> . W. H. Anderson.	Part loss.
Dec.	7 McNaughton. . .	31	Montreal.....	Tug.....	37 Port Dalhousie Kingston.	Half mile E. of Murray canal.	Foundered..	Part loss.
Oct.	2 Nepigon.	33	Buffalo, N.Y..	Steam		Dome island, St. Lawrence river.	Stranded..... W. N. Brooks.	No damage.
Nov.	22 Norfolk. . . 214561	1	New York.	Steel Steam	1,780 Detroit.... Chatham.	East end of Corn- wall canal.	4 blades of propeller broken. R. W. Hart.	Part loss, \$1,500.
Nov.	25 No. 82. 214518	1	New York....	Schr.... Steel Steam	2,070 Cleveland, ... New York.	Grenadier island....	Stranded. S. Soressen.	Part loss.
June	2 Omaha... 134350	29	Montreal....	Wood Steam	800-40 Montreal. . Erie, Pa.	Coteau lake, lake St. Francis.	Collided with un- known vessel. J. A. Toupin.	No damage.
May	7 Pentland. . . 105656	22	Fairport.....	Barge... Wood Steam	617 Cleveland.... Montreal.	Morgan's point....	Stranded... A. Dixon.	Part loss.
July	30 Princeton.	4	New York.....	Steel Steam	2,049 Tuxpain, Mexico. . Montreal.	Montreal harbour .	Stranded. Alex. Paul.	Part loss.
Aug.	13 Primrose 94990	26	Toronto....	Iron Steam	119-33 Haultain Point. . Toronto.	Toronto.....	Collided with <i>Turbinia</i> . Alex. Brown.	Slight damage.
Nov.	2 Pentland... 105656	22	Fairport .	Barge... Wood Steam	617 Cleveland.... Montreal.	Lachine canal. . . .	Collided with draw- bridge. A. Dixon.	Part loss.
June	29 Quebec . . 111663	16	Montreal...	Schr....	989 Port Colborne . Montreal.	Canada island, St. Lawrence river.	Stranded.. W. Lalonde.	Part loss, Ship, \$21,000. Cargo, \$20,000. Slight damage.
Aug.	12 Rapids King... 122407	9	Montreal...	Steam	1,999-44 Montreal. . Prescott.	Off Hamilton's Island Light lake St. Francis.	Stranded.. S. Putnam.	
Sept.	25 Roberval. 125972	10	Ottawa. . . .	Steel Steam	157 Trois-Rivières.. Oswego.	12 miles off Oswego.	Foundered... P. Eligh.	4 Total loss, \$15,000.
May	12 Saronic . . 80776	33	Sarnia	Wood Steam	1,296-42 Cleveland.... Port William.	8 miles off Copper harbour, lake Superior.	Damaged in gale...	Part loss.
June	1 Siskatoon 123965	6	Sunderland.	Schr.... Steel Steam	1,148 Port William... Montreal.	Cherry Island light lake St. Francis.	Collided with <i>Omaha</i> . R. McEneaney.	Part loss.
Aug.	20 Saronic 80776	33	Sarnia	Wood Steam	1,296-42 Port William... Port McNicoll.	Cockburn island Lake Huron.	Sprung a leak. ... J. W. Wintguay.	Total loss, Ship, \$135,000. Cargo, \$30,000.

STATEMENT of wrecks and casualties reported as having occurred to British, Canadian and Foreign vessels in Canadian waters and to Canadian vessels in other waters from January 1 to December 31, 1916. Inland Water Wrecks.—*Concluded.*

INLAND WATERS WRECKS—Continued.

Type of casualty	Name of ship	Age of ship, years	Registered Port	How rigged	Register tonnage	Port sailed from	Place where casualty happened	Particulars of Casualty	Lives lost	Loss, Total or partial
Aug. 21	Sully 112144	13	Montreal	Wood Steam	730 94	Erie, Pa Montreal	Lachine, canal	Collided with <i>Adenice</i> , C. E. Coons, Damaged by fire		Part loss, \$100.
Aug. 20	S. Lewis 10007	8	Port Arthur	Wood Steam	944 54	Port Arthur, In Dry Dock				Part loss, \$50,000.
Aug. 20	S. W. Derby 11234	10	Montreal	Wood Steam	986 63	Charlottetown	Half mile W. of Port Colborne, Welland canal, Mississauga.	Stranded		No damage.
Aug. 23	S. W. Derby 11234	20	St. John, N.B.	Wood Steam		Port Miller		Stranded		No damage.
Sept. 8	S. George Marshall 107426	28	Brockville	Steam	540	Little Saguenay, Erie, Pa	Lark reef, Mouth of Saguenay river	Stranded		Part loss, \$230,000.
Sept. 24	Sky Pilot 110342	14	Toronto	Wood Steam	3		Toronto	Burnt		Total loss.
Oct. 3	Sully 112144	13	Montreal	Steam	730 94	Erie, Pa Montreal	Whale Back shoal	Stranded		Part loss.
May 9	Flora 97200	26	Montreal	Wood Steam Barge	584	Kingston, Fairhaven	Lake Ontario	Stranded		Total loss.
July 12	Toyland 108108	22	Montreal	Wood Steam	1,070 27	Montreal, Port William	Lake St. Francis	Stranded		No damage.
July 20	Penista						Soo River, near pointe aux Pins.	Stranded		Slight damage.
Aug. 13	Perlinia 112201	18	Hamilton	Iron Steam	603	Niagara Toronto	Toronto harbour	Collided with <i>Primrose</i> , B. W. Bongard.		Part loss.

SESSIONAL PAPER No. 21

May	25	Victoria..... 111666	14	Montreal.....	.....	Wood Steam	183-32 Rigaud..... Montreal.	Lachine canal.....	Collided with gate of Lock No. 4. F. Malette. Collided with <i>Bellenille</i> . Alph. Lepine. Stranded..... F. T. Eber.	.....	Slight damage.
June	1	Virginia..... 76615	31	Montreal.....	.....	Wood Steam	89-15 Montreal..... Kingston.	Lake St. Louis.....	.....	.....	Slight damage.
Aug.	25	Veronica.....	28	Buffalo.....	.....	Wood Steam	880 Erie, Pa..... Montreal.	2 miles N.E. of Cape Vincent.	.....	.....	Part loss.
May	15	William Castle Rhodes.	16	Buffalo.....	.....	Schr..... Iron Steam	1,630 Lorrain, Ohio..... Montreal.	Welland & Cornwall canals.	Collided with walls of canals. A. B. Fletcher. Stranded..... H. Larose.	.....	Part loss.
June	17	W. B. Morley... 138093	24	Montreal.....	.....	Wood Steam	1,086 79 Erie, Pa..... Quebec.	Plum island, St. Lawrence river.	.....	.....	Part loss.
June	17	Windsor 125986	26	Montreal...	.....	Wood Steam	1,276 Montreal..... Oswego.	Near Lock No. 5.... Soulanges canal.	Collided with bank of canal. J. W. Doyle. Collided with <i>Nottingham</i> . N. Campbell.	.....	Part loss, \$500.
July	27	W. Grant Morden. 134015	2	Port Arthur...	.....	Steel Steam	6,086 Port Arthur..... Buffalo.	Lat. 46° 58' N.... Long. 85° 21' W., Lake Superior.	.....	.....	Slight damage.
July	27	Nottingham	14	Oswego...	.....	Steel Steam	..... Milwaukee..... Two Harbours.	25 miles W. N. W.... of Whitefish, Lake Superior.	Collided with W. Grant Morden.	.....	Part loss.
Aug.	6	W. B. Morley. 138093	24	Montreal.....	.....	Wood Steam	1,086-79 Montreal..... Erie.	Alexandria Bay reef St Lawrence river.	Stranded..... H. Larose.	.....	Part loss, \$500.
Aug.	23	Wyoming...	27	Port Huron, Mich	.....	Wood Steam	934 Ashtabula..... Montreal.	One mile W. of Iroquois point, St. Lawrence river.	Stranded..... Hugh O'Hagan.	.....	Part loss, \$700.

APPENDIX No. 9.

ANNUAL REPORT OF THE MASTERS AND SEAMEN BRANCH

To the Deputy Minister of Marine and Fisheries,
Ottawa.

SIR,—I have the honour to submit the 1916-17 annual report of this branch.

GOVERNMENT NAVIGATION SCHOOLS AND MARINE LECTURE COURSES.

During the twelve months ended March 31, 1917, navigation schools, were in operation for longer or shorter periods at St. John, N.B., Halifax, N.S., Charlottetown, P.E.I., Quebec, Que., and at Kingston, Ont.; and marine lectures were delivered at Yarmouth and North Sydney, N.S., Collingwood, Ont., and at Vancouver, B.C.

At St. John, Capt. Rufus C. Cole, instructor, the school was open every day except Sundays and holidays; average attendance, two; maximum attendance, seven.

At Halifax, Capt. John Simmons, instructor, the school was open every day except Sundays and holidays; average attendance, eight; maximum attendance, thirty-three.

At Charlottetown, Capt. James Lumsden, instructor. The school at Charlottetown was new this year. It opened on the 18th December, 1916, and closed on the 30th April, 1917. The results at the Charlottetown school were somewhat disappointing, the attendance not being as regular as was hoped for.

At Quebec, Capt. Napoleon Lachance, instructor, the school was in operation ninety-seven days; average attendance, fourteen; maximum attendance, thirty-two.

At Kingston, Capt. W. Steeves, instructor, the school was in operation twelve weeks and eighteen pupils were in attendance.

At Yarmouth, Capt. John E. Murphy, lecturer, twenty-nine lectures were delivered; average attendance, two; maximum attendance, five.

At North Sydney, Capt. Jas. Sutherland, lecturer; thirty-one lectures were delivered; average attendance, five; maximum attendance, ten.

At Collingwood, Capt. Geo. C. Coles, lecturer, twenty-six lectures were delivered; average attendance, eight; maximum attendance, twelve.

At Vancouver, Capt. Chas. Eddie, lecturer; twenty-six lectures were delivered; average attendance, twenty-two; maximum attendance, forty-eight.

The total expenditure on account of navigation schools during the above period was \$1,461.92.

MASTERS AND MATES.

Eastern Division.

At Halifax, N.S., Capt. F. N. Malcolm, examiner; one hundred and twenty-four candidates were examined: four for master, thirteen for mate, and twenty-five for second mate, sea-going; and thirty-six for master, and forty-six for mate, coasting. Three candidates failed: one for mate and one for second mate, sea-going; and one for mate, coasting. Six persons underwent the sight tests.

At Yarmouth, N.S., Capt. J. E. Murphy, examiner, nineteen candidates were examined: four for master, two for mate, and four for second mate, sea-going; five for master, and three for mate, coasting; and one for a master's temporary certificate. One candidate failed for mate, coasting.

SESSIONAL PAPER No. 21

At North Sydney, N.S., Capt. Jas. Sutherland, examiner, four candidates were examined: one for master and three for mate, coasting.

At St. John, N.B., Capt. W. R. Bennett, examiner, twenty-one candidates were examined: one for master and one for second mate, sea-going; seven for master and six for mate, coasting; and four for master and two for mate, minor waters. Four candidates failed: one for mate, coasting; and two for master, and one for mate, minor waters. Seven persons underwent the sight tests.

At Charlottetown, P.E.I., Capt. Alex. Cameron, examiner, ten candidates were examined: four for master and five for mate, coasting; and one for master, minor waters. Seven persons underwent the sight tests.

At Quebec, Que., Capt. P. L. Lachance, examiner, seventy-four candidates were examined; one for second mate, sea-going; twenty-two for mate, coasting; six for master and ten for mate, inland waters; twenty-two for master and six for mate, minor waters; and seven for master's temporary certificates. Thirteen candidates failed: four for mate, coasting; two for master and three for mate, inland waters; and three for master and one for mate, minor waters. Twenty-five persons underwent the sight tests, one failed.

Western Division.

At Vancouver, B.C., Capt. Chas. Eddie, examiner, fifty-six candidates were examined: one for master, two for mate and one for second mate, sea-going; twenty-six for master and eighteen for mate, coasting; one for mate, inland waters; three for master and two for mate, minor waters; and two for master's temporary certificates. Three candidates failed: two for mate, sea-going; and one for master, coasting. Seven persons underwent the sight tests, one failed.

At Victoria, B.C., Capt. J. D. Macpherson, examiner, thirty-nine candidates were examined: four for master and nine for second mate, sea-going; eleven for master and ten for mate, coasting; four for master, minor waters, and one for a master's temporary certificate. One person underwent the sight tests.

At Prince Rupert, B.C., Capt. A. M. Davies, examiner, twelve candidates were examined: eleven for master and one for mate, coasting. One candidate failed for master, coasting.

At Edmonton, Alta., Capt. A. D. Grant, examiner, three candidates were examined: one for master and one for mate, minor waters; and one for a master's temporary certificate.

Inland Waters Division.

At Toronto, Ont., Capt. H. W. King, examiner, ninety-two candidates were examined: four for master and eight for mate, coasting; twenty-one for master and nineteen for mate, inland waters; fourteen for master, minor waters; and twenty-six for master's temporary certificates. Eight candidates failed: one for master, coasting; three for master and three for mate, inland waters; and one for master, minor waters. Eight persons underwent the sight tests, two failed.

At Collingwood, Ont., Capt. Geo. C. Coles, examiner, sixteen candidates were examined: three for master and two for mate, coasting; four for master and five for mate, inland waters; one for mate, minor waters; and one for a master's temporary certificate. One candidate failed for mate, inland waters.

At Kenora, Ont., Capt. Geo. P. Phillips, examiner, four candidates were examined for master's temporary certificates.

At West Selkirk, Man., Capt. M. Thordarson, examiner, three candidates were examined for master, minor waters.

CERTIFICATES ISSUED.

During the year the following numbers and grades of certificates have been issued to masters and mates: fourteen masters', fourteen mates' and forty second mates' sea-going certificates of competency; one hundred and four masters' and one hundred and seventeen mates' coasting certificates of competency; twenty-six masters' and twenty-eight mates' inland waters certificates of competency; forty-six masters' and ten mates' minor waters certificates of competency; and forty-three masters' temporary certificates. A complete list of masters' and mates' certificates issued during the year follows:

RECEIPTS AND EXPENDITURE.

The total amount collected in the way of examination fees for certificates during the twelve months ended March 31, 1917, was \$4,556.43, and the amount expended on account of this service was \$14,087.87, an excess of expenditure over receipts of \$9,531.44. This expenditure of \$14,087.87 includes \$1,232.58 for printing new Seamen's Continuous Discharge Books.

The following statement shows the total receipts and expenditures on account of masters and mates during the last ten years:—

	Expenditure.	Receipts.
For the fiscal year ended March 31, 1908.	\$ 11,508 31	\$ 4,306 50
" " " " 31, 1909.	8,244 56	4,192 50
" " " " 31, 1910.	6,662 72	4,314 50
" " " " 31, 1911.	5,801 62	4,446 61
" " " " 31, 1912.	7,226 54	3,970 00
" " " " 31, 1913.	9,992 66	4,039 06
" " " " 31, 1914.	13,273 11	5,558 75
" " " " 31, 1915.	12,723 17	4,001 00
" " " " 31, 1916.	13,828 13	4,857 73
" " " " 31, 1917.	14,087 87	4,556 43
Expenditure.	\$103,348 49	\$44,402 63
Receipts.	44,402 63	
Excess of expenditure over receipts.	\$58,945 86	

PILOTAGE.

The Minister of Marine and Fisheries is the pilotage authority in the pilotage districts of Montreal and Quebec, and all matters of pilotage in those districts are controlled by the minister through a general superintendent at Quebec.

In the pilotage district of Montreal there are fifty pilots and fifteen apprentices, and in the pilotage district of Quebec there are sixty-two pilots and twenty-four apprentices. Pilots in these two districts receive all their earnings, less 5 per cent in the Montreal district and 7 per cent in the Quebec district, which is paid into their respective Decayed Pilots' Funds. The total gross earnings of the Montreal pilots for the twelve months ended December 31, 1916, amounted to \$104,102.62, and the total gross earnings of the Quebec pilots during the same period amounted to \$123,827.16. All expenses of these services are paid out of public funds, and during the twelve months ended March 31, 1917, amounted to \$44,435.78.

Retired pilots of the Montreal and Quebec districts are regularly paid a yearly pension of \$300 each out of their respective Decayed Pilots' Funds, and certain retired pilots of the Quebec district are paid in addition a yearly Government pension of \$300, those Government pensions for the twelve months ended March 31, 1917, amounting to \$8,700.

SESSIONAL PAPER No. 21

Extracts from the annual (1916) returns of the general superintendent form an appendix to this report.

Of the thirty-nine other pilotage authorities constituted under the authority of the Governor in Council in pursuance of the provisions of the Canada Shipping Act, twenty-two have sent in returns for 1916, extracts from which also form an appendix to this report.

I have the honour to be, sir,

Your obedient servant,

B. F. BURNETT,

Officer in Charge,

Masters and Seamen Branch.

8 GEORGE V, A. 1918

LIST of Sea-going Certificates of Competency issued to Masters, Mates and Second Mates, during the twelve months ended March 31, 1917.

No. of Certificate.	Date of Certificate.	Name.	Grade.	Address.	Where Examination was Passed.	Fee.
	1916.					\$ cts.
4140	April 4	William Edward Lockhart.	Master	Hantsport, N.S.....	Halifax, N.S.	15 00
4141	" 8	John Hughes	2nd Mate S/S only.	Yarmouth, N.S.	Yarmouth, N.S..	8 00
4142	" 17	John Cozswell MacKenzie.	Mate S/S & fore-aft.	Halifax, N.S.	Halifax, N.S.	8 00
4143	" 19	Robert James Morgan...	2nd Mate S/S only.	Yarmouth, N.S.	Yarmouth, N.S..	8 00
4144	" 22	Foster Bullerwell	Master.	Brooklyn, N.Y., U.S.	Yarmouth, N.S.	15 00
4145	" 26	James Freeman Smeltzer	Mate	Malone Bay, N.S.	Halifax, N.S.	8 00
4146	" 26	Hugh Carter	2nd Mate	Halifax, N.S.....	"	8 00
4147	" 26	Arthur Daveney Steele	Mate	Ireland	"	8 00
4148	" 28	Herbert Wright Brennan	2nd Mate S/S only.	Ireland.....	"	8 00
4149	May 9	Frederick William Hayes	Mate S/S only.	Ireland	"	8 00
4150	" 9	Walter Cadden	2nd Mate S/S only.	Halifax, N.S.....	"	8 00
4151	" 26	Francis Annis Brannen	Master S/S and fore and aft.	Clark Harbour, N.S..	"	15 00
4152	" 26	Ralph Peary Fuller..	2nd Mate S/S only.	Barbington, N.S.	"	8 00
4153	" 12	John Forsyth	2nd Mate S/S only.	Halifax, N.S.	"	8 00
4154	" 23	Thomas Frank Balkwill	2nd Mate S/S only.	Ireland	"	8 00
4155	" 28	Henry Norman Casse...	2nd Mate S/S only.	"	"	8 00
4156	" 19	Cecil Lefroy Turbett..	2nd Mate	Ireland	Victoria, B.C.	8 00
4157	" 26	Leahy Lee McEllen	2nd Mate S/S only.	Yarmouth, N.S.	Yarmouth, N.S..	8 00
4158	" 4	Donald K. Mac Dermid	2nd Mate S/S only.	Glasgow	Halifax, N.S.....	8 00
4159	" 11	David W. McEllen	Master fore and aft only.	Yarmouth, N.S.	Yarmouth, N.S..	15 00
4160	" 16	John F. P. Hamilton	Mate	Westerford, Eng.	Halifax, N.S.	8 00
4161	" 24	Robert Findlay.....	2nd Mate S/S only.	New York, U.S.A...	Yarmouth, N.S..	8 00
4162	" 5	Geoffrey B. Atkinson...	2nd Mate S/S only.	Leytonstone, Eng...	Victoria, B.C.....	8 00
4163	" 5	Philip John Robinson...	2nd Mate S/S only.	Delhi	"	8 00
4164	" 5	Donald Henderson	2nd Mate	Victoria, B.C.	"	8 00
4165	" 5	Donald Henderson	2nd Mate	Victoria, B.C.	Victoria, B.C.	15 00
4166	" 6	John Algot Henrikson...	2nd Mate S/S and fore and aft.	Trondheim, N.S.	Halifax, N.S.	8 00
4167	" 12	Marjorie Thelma Gaudin	Master	New Orleans, U.S.A..	Yarmouth, N.S..	15 00
4168	" 12	Joseph Hugh Walker...	2nd Mate S/S and fore and aft.	Halifax, N.S.....	Halifax, N.S.....	8 00
4169	" 16	Donald Henderson	Mate	"	"	8 00
4170	" 26	Charles E. C Brodrick	2nd Mate	Vancouver, B.C.....	Victoria, B.C...	8 00
4171	" 26	Charles Max Cochrane...	Mate	Halifax, N.S.....	Halifax, N.S.....	8 00
4172	" 26	Charles Max Cochrane...	Mate	Hantsport, N.S...	Yarmouth, N.S..	8 00
4173	" 27	Charles Max Cochrane...	2nd Mate	Halifax, N.S.	Halifax, N.S.	8 00
4174	" 10	Charles Max Cochrane...	2nd Mate	Halifax, N.S.	Halifax, N.S.	8 00
4175	" 11	Carl Johann R. Kohler.	Master	Lunenburg, N.S.....	Yarmouth, N.S.	15 00
4176	" 11	Carl Johann R. Kohler.	2nd Mate	Ireland	Halifax, N.S.	8 00
4177	" 11	Donald Henderson	2nd Mate	"	"	8 00

SESSIONAL PAPER No. 21

LIST of Sea-going Certificates of Competency issued to Masters, Mates and Second Mates, during the twelve months ended March 31, 1917—*Concluded*.

No. of Certificate.	Date of Certificate.	Name.	Grade.	Address.	Where Examination was Passed.	Fee.
	1916.					\$ cts.
4179	Oct. 26.	Henry Stephens	2nd Mate...	Halifax, N.S.....	Halifax, N.S.....	8 00
4180	" 30...	Leslie Armitage.	Mate	Yarmouth, N.S.	Yarmouth, N.S...	8 00
4181	Nov. 3...	Harold Ford.	2nd Mate	Halifax, N.S.....	Halifax, N.S.	8 00
4182	" 15...	Frederick David Thomas	2nd Mate..	Liverpool, England...	Victoria, B.C.....	8 00
4183	" 15..	William Leslie P. Cox...	S/S only. 2nd Mate...	Redland, Bristol.....	"	8 00
4184	" 27...	Thomas Norman Havard	Master.....	Newport, South Wales	"	15 00
4185	" 30...	Huntley O. Giffin	Mate S/S and fore and aft.	Halifax, N.S	Halifax, N.S.	8 00
4186	" 30...	Robert Hiram Hayward	Mate. S/S and fore and aft.	West Dublin, N.S.	"	8 00
4187	Dec. 2...	John Henry Aspinall....	2nd Mate... S/S only.	Capilano, P.O.....	Vancouver, B.C...	8 00
4188	" 7.	Otty Harold Brown.	2nd Mate S/S only.	St. John, N.B.	St. John, N.B.	8 00
4189	" 12..	Rupert Roscoe	Master..	Brentwood, Essex, Eng	Victoria, B.C	15 00
4190	" 16...	Robert McDonald Barkhouse.	2nd Mate. S/S and fore and aft.	Halifax, N.S.....	Halifax, N.S.....	8 00
4191	" 28...	Robert H. C. Crawford.	2nd Mate... S/S only.	Nassau, N.P., Bahama Isl'd.	Victoria, B.C.....	8 00
	1917.					
4192	Jan. 4	Vernon Hirtle.	Master. ... S/S and fore and aft.	Halifax, N.S.....	Halifax, N.S.....	15 00
4193	" 23	Robert Irvin Swansburg.	2nd Mate S/S only.	"	"	8 00
4194	" 26...	Frederick S. Halliday.	2nd Mate... S/S only.	Alert Bay, B.C.....	Victoria, B.C.....	8 00
4195	Feb. 17	Eugene Fortin	Mate S/S only.	L'Islet, P.Q..	Halifax, N.S	8 00
4196	March 9...	Kenneth Carstairs Arnell	Master..... S/S only.	London, England.....	St. John, N.B.....	15 00
4197	" 10...	James Timothy Gooding	2nd Mate...	Halifax, N.S.	Halifax, N.S.....	8 00
4198	" 22...	William Murray Wilson.	Mate..... S/S only.	Glasgow, Scotland....	"	8 00
4199	" 22...	John Henry Elliott.....	2nd Mate.. S/S only.	Bristol, England.....	"	8 00
4200	" 22	Perry Robert Parks..	2nd Mate.. Fore and aft only.	Parks Creek, N.S.	"	8 00
4201	" 22	Lehman Yorke Wentzel.	2nd Mate.. S/S and fore and aft.	Riverport, N.S	"	8 00
4202	" 22	Arthur John D. Berrington.	2nd Mate S/S only.	Cornwall, Eng	"	8 00
4203	" 22	Frank Montem Smith..	Mate S/S only.	Somerset, Eng	"	8 00
4204	" 22...	Louis Dicks	2nd Mate S/S and fore and aft.	Halifax, N.S.....	"	8 00
4205	" 24...	Dennis Woolliscroft Slade	Master. S/S only.	Cheshire, England....	Victoria, B.C.....	15 00
4206	" 29...	Harold George Kennaird	Master.	Gravesend, Kent, Eng	"	15 00
4207	" 31...	Thomas C. M. Cotton..	Mate S/S and fore and aft.	Halifax, N.S	Halifax, N.S.....	8 00

8 GEORGE V, A. 1918

LIST of Certificates of Competency issued to Masters and Mates of Coasting and Inland Waters vessels during the twelve months ended March 31, 1917.—Continued.

No. of Certificate.	Date of Certificate.	Name	Grade.	Address.	Where Examination was Passed.	Fee.
	1916.					\$ cts.
8078	April 3	William Brian..	Master...	Kingston, Ont..	Collingwood, Ont..	15 00
8079	" 3...	William A Blackwell.	Mate	Toronto, Ont..	Toronto, Ont..	6 00
8080	" 3...	William Henry Burgess	Master....	Vancouver, B.C...	Vancouver, B.C...	15 00
8081	" 3...	William Henry Burgess	Mate	"	"	6 00
8082	" 3...	William H. Montgomery	Master....	Collingwood, Ont.....	Collingwood, Ont.	15 00
8083	" 3...	William John Moles.	Master....	Toronto, Ont....	Toronto, Ont....	15 00
8084	" 3...	Charles Fullerton ..	Master...	Muskoka, Ont..	"	15 00
8085	" 4...	Joseph E. Langlois.	Mate.	Quebec, P.Q.	Quebec, P.Q..	6 00
8086	" 4	Wm. Crummey Moores.	Mate..	Halifax, N.S.....	Halifax, N.S.....	6 00
8087	" 4...	Henry Stephens	Mate.	"	"	6 00
8088	" 4...	George W. McLean	Mate	Shelburne, N.S	"	6 00
8089	" 4...	Abram Porter...	Mate	Halifax, N.S.	"	6 00
8090	" 4...	Earle Edward Denton..	Master....	Westport, N.S...	Yarmouth, N.S..	15 00
8091	" 4...	Fred Israel Wilson..	Master...	Barrington, N.S.	"	15 00
8092	" 5...	Ludger Fournier..	Mate	Montmagny, P.Q...	Quebec, P.Q.....	6 00
8093	" 5...	Joseph Magloire Caron..	Mate	St. Jean, Port Joli, P.Q.	"	6 00
8094	" 5...	John Milton Chapman..	Master...	Murray River, P.E.I..	Halifax, N.S.....	15 00
8095	" 5...	John Milton Chapman...	Mate.....	"	"	15 00
8096	" 6.	Joseph Bruno Daigle..	Mate	Ste. Emilie, P.Q.	Quebec, P.Q.	6 00
8097	" 8...	William John Sigsworth	Master..	Cardigan, P.E.I.....	Charlottetown P.E.I.	15 00
8098	" 8...	Henry Goodfellow ..	Master..	Chatham, N.B	St. John, N.B.....	15 00
8099	" 8.	Otty Harold Brown....	Mate.....	St. John, N.B.....	"	6 00
8100	" 8...	Alexander Carson Fraser	Master...	Rexton, N.B..	Halifax, N.S.	15 00
8101	" 8	Alexander Carson Fraser	Mate	"	"	6 00
8102	" 8...	John Robert Renouf.....	Master.....	St. Georges, N.F.L...	"	15 00
8103	" 8...	John Robert Renouf.....	Mate.....	"	"	6 00
8104	" 11.	David Breton...	Mate	Channel, N.F.L.....	North Sydney, N.S.	6 00
8105	" 11...	Henry Prevost..	Master..	Methakatha, B.C	Prince Rupert, B.C	15 00
8106	" 11	Moise Guerin.....	Master..	Laprairie, P.Q.....	Montreal, P.Q..	15 00
8107	" 11...	Joseph Horace Duchesne	Mate.....	St. Irenée, P.Q.	Quebec, P.Q.....	6 00
8108	" 13...	Edem Tellier	Master..	Three Rivers, P.Q....	"	15 00
8109	" 13...	Joseph Eugene Letellier	Master..	Grandmas, P.Q	"	15 00
8110	" 14	Harold E. Baxter.	Mate	Kingston, Ont.....	Toronto, Ont.....	6 00
8111	" 14	Thompson Campbell.	Mate	Sarnia, Ont	"	6 00
8112	" 14.	Albert James Hoegu...	Master.....	Owen Sound, Ont....	Collingwood, Ont.	15 00
8113	" 14	Albert James Hogue	Mate	"	"	6 00
					(Interim certifi- cate for which no fee is charged)	
8114	" 17...	Conchris Duce...	Mate	Collingwood, Ont....		
8115	" 17	John Cogwell MacKenzie	Master	Halifax, N.S.	Halifax, N.S.	15 00
8116	" 17.	Frank Peter Gallant...	Mate	Leville, Lot 1, P.E.I.	Charlottetown, P.E.I.	6 00
8117	" 17.	Robert Alex. Cassidy.	Master	Chatham, N.B.	"	15 00
8118	" 17.	Joseph Pamphile Morin	Mate..	L'Islet, P.Q.....	Quebec, P.Q....	6 00
8119	" 17...	Edmund George Staley	Mate	Kingston, Ont.....	Kingston, Ont....	6 00
8120	" 17.	Demetrius Vivian V. Per- cival.	Master	"	"	15 00
8121	" 17...	Jeremiah Leonard Harte	yMate...	"	"	6 00
8122	" 18	John Williams	Mate.....	Vancouver, B.C.....	Vancouver, B.C...	6 00
8123	" 22	Joseph A. H. Lachance..	Mate.....	St. John, P.Q...	Quebec, P.Q...	6 00
8124	" 22.	Joseph Gabriel H. Fortin	Mate	Cap St. Ignace, P.Q...	"	6 00
8125	" 22	Joseph A. E. Mallette.	Master	Rigaud, P.Q.	"	15 00
8126	" 26	James Albert Bowes.	Mate	Dartmouth, N.S.....	Halifax, N.S....	6 00
8127	" 26.	James Freeman Smeltzer	Master	Mahone Bay, N.S.....	"	15 00
8128	" 26	Hugh Carter ..	Mate	Halifax, N.S.....	"	6 00
8129	" 27...	William Henry Batt	Master	Charlottetown, P.E.I.	Charlottetown, P.E.I.	15 00
8130	" 27	Hans Mikkelsen Uldall	Master	West Point Grey, P.O. B.C	Vancouver, B.C...	15 00
8131	" 27...	George Alfred Haines...	Master	Cheswall, Ont	Ottawa, Ont.....	15 00
8132	" 27	Alfred M. Lee	Master....	Prince Rupert, B.C	Prince Rupert, B.C.	15 00

SESSIONAL PAPER No. 21

List of Certificates of Competency issued to Masters and Mates of Coasting and Inland Waters vessels during the twelve months ended March 31, 1917.—Continued.

No. of Certificate.	Date of Certificate.	Name.	Grade.	Address.	Where Examination was Passed.	Fee.
	1915.					\$ cts.
8133	April 27...	Allen Walter Lewis.....	Master...	Vancouver, B.C.....	Vancouver, B.C...	15 00
8134	" 27...	Allen Walter Lewis.....	Mate	"	"	6 00
8135	" 27...	George Urias Schmeisse	Master...	Isaac Harbour, N.S...	Halifax, N.S.	15 00
8136	" 27...	Cyril Bourgeois...	Master...	Eastern Harbor, N.S	"	15 00
8137	" 27...	John Forsyth...	Mate	Halifax, N.S....	"	6 00
8138	" 27...	Robert Jno. Semheisser.	Master.....	Middle Lahave, N.S..	"	15 00
8139	" 27...	Frederick E. Williams	Mate.....	Shore Road Dartmouth, N.S.	"	6 00
8140	May 1...	Hubert Pettipas.....	Mate	Halifax, N.S.....	"	6 00
8141	" 3...	Joseph Noel A. Goulet..	Master.....	Sorel, P.Q.....	Quebec, P.Q.....	15 00
8142	" 5...	Alfred Nelson...	Master...	Whonnock, B.C..	Victoria, B.C.	15 00
8143	" 5...	Martin R. Maher.....	Master.....	Port Arthur, Ont...	West Selkirk, Man.	15 00
8144	" 5...	Burnell Woodworth Lyon	Master.....	Vancouver, B.C.....	Vancouver, B.C...	15 00
8145	" 5...	Clarence T. Johnson...	Master...	"	"	15 00
8146	" 5...	Edward Seymour Gage.	Master.....	Toronto, Ont.....	Toronto, Ont....	15 00
8147	" 5...	Edward Seymour Gage.	Mate	"	"	6 00
8148	" 5...	Thomas York	Master...	Rockland, Ont....	Ottawa, Ont..	15 00
8149	" 5...	Robert Thrasher....	Master.....	Pembroke, Ont...	"	15 00
8150	" 9...	Clarence J. Pendergast..	Master.....	Cornwall, Ont.....	"	15 00
8151	" 15...	Arthur F. Thompson..	Master...	Beaumaris, Ont.....	Toronto, Ont.....	15 00
8152	" 15...	Ronald Hicks...	Mate	Vancouver, B.C...	Vancouver, B.C..	6 00
8153	" 16...	William Spooner	Master...	Halifax, N.S.....	Halifax, N.S...	15 00
8154	" 19...	Thomas Edward Kird..	Mate	Summerside, P.E.I..	North Sydney, N.S	6 00
8155	" 19...	John A. MacDonald....	Mate.....	Charlottetown, P.E.I.	Charlottetown, P.E.I.	6 00
8156	" 19...	Eugene Arthur deVillers	Mate.....	Lotbiniere, P.Q.....	Quebec, P.Q...	6 00
8157	" 19...	Joseph Pierre Dufour...	Master.....	Montreal, P.Q.....	"	15 00
8158	" 19...	Joseph A. Caron.....	Mate	St. Adalbert L'Islet, P.Q.	"	6 00
8159	" 19...	Stephen Warren Shears..	Mate	Halifax, N.S.....	Halifax, N.S.....	6 00
8160	" 20...	Leslie T. Merriam..	Master.....	Port Greville, N.S....	St. John, N.B...	15 00
8161	" 20...	Thomas James Mountain	Mate	Malpeque, P.E.I.....	Charlottetown, P.E.I.	6 00
8162	" 20...	William Brazier Spragg	Master.....	Hampton Village, N.B	St. John, N.B...	15 00
8163	" 20	Harry Benjamin Bruhm	Master.....	Montague, P.E.I.	Charlottetown, P.E.I.	15 00
8164	" 26...	Ralph Peary Fuller	Mate...	Burlington, N.S...	Halifax, N.S....	6 00
8165	" 27...	Joseph Roderick Burrell	Master.....	Winnipegosis, Man..	West Selkirk, Man	15 00
8166	" 30...	Duncan Leask.....	Mate	Victoria, B.C.....	Victoria, B.C.....	6 00
8167	" 30...	Harry McIndoo.....	Master...	Nanaimo, B.C.....	"	15 00
8168	June 6...	John Parsons Shears...	Master.....	Halifax, N.S.....	Halifax, N.S.....	15 00
8169	" 6...	Gordon Young...	Mate	"	"	6 00
8170	" 6...	James C. E. Archibald..	Mate	North Sydney, N.S..	St. John, N.B..	6 00
8171	" 6...	John Muir.....	Master...	Vancouver, B.C..	Vancouver, B.C...	15 00
8172	" 6...	John Muir.....	Mate	"	"	6 00
8173	" 6...	Gordon Douglas Bunt...	Mate	Victoria, B.C.....	Victoria, B.C.....	6 00
8174	" 9...	Joseph Edmond Mailhiot	Mate.....	Champlain, P.Q	Quebec, P.Q.	6 00
8175	" 21...	Thomas Robert McLay.	Master.....	Nanaimo, B.C.....	Victoria, B.C...	15 00
8176	" 21...	William Mann Tyson....	Mate.....	Victoria, B.C.	"	6 00
8177	" 23...	Arthur Ernest South....	Mate.....	Halifax, N.S.....	Halifax, N.S.....	6 00
8178	" 23...	Joseph Arthur R. Lachance.	Mate	St. John, Island of Orleans, P.Q.	Quebec, P.Q.	6 00
8179	" 27...	Thorvald R. Anderson..	Master.....	Restigouche, P.Q.....	St. John, N.B.....	15 00
8180	" 27...	Archie E. McFadden...	Mate...	Johnsons Mills, N.B...	"	6 00
8181	" 28...	Reuben Findley.....	Mate.....	Dartmouth, N.S...	Halifax, N.S....	6 00
8182	" 28...	Lorne Dauphinee.....	Mate	French Village, N.S..	"	6 00
8183	July 5...	Enoch Westerlund.....	Master.....	Prince Rupert, B.C...	Prince Rupert, B.C	15 00
8184	" 5...	Edward Crawford Swank	Mate...	Vancouver, B.C.	Vancouver, B.C..	6 00
8185	" 13...	Ralph Mogg.....	Master.....	Port Arthur, Ont.....	West Selkirk, Man	15 00
8186	" 17...	Joseph J. Deslauriers...	Mate	Quebec, P.Q.....	Quebec, P.Q.....	6 00
8187	" 17...	William Albert Little..	Master.....	Margaretsville, N.S..	St. John, N.B...	15 00
8188	" 17...	John Nelson Card...	Mate	Yarmouth, N.S...	Yarmouth, N.S..	6 00
8189	" 17...	John McKernan.....	Master...	Collingwood, Vancouver, B.C.	Prince Rupert, B.C	15 00
8190	" 17...	William Parsons.....	Master...	Prince Rupert, B.C..	"	15 00

8 GEORGE V, A. 1918

LIST of Certificates of Competency issued to Masters and Mates of Coasting and Inland Waters vessels during the twelve months ended March 31, 1917.—Continued.

No. of Certificate.	Date of Certificate.	Name.	Grade.	Address.	Where Examination was Passed.	Fee
	1916.					\$ cts.
8191	July 17	Rene Caron	Master	Halifax, N.S.	Halifax, N.S.	15 00
8192	" 19	William Schade	Master	Victoria, B.C.	Victoria, B.C.	15 00
8193	" 24	George Henry Carpenter	Mate	Halifax, N.S.	Halifax, N.S.	6 00
8194	" 24	John Lowery	Mate	Montague, P.E.I.	Charlottetown, P.E.I.	6 00
8195	" 24	Bernard Young	Mate	Halifax, N.S.	Halifax, N.S.	6 00
8196	Aug 3	Alfred Bradford	Master	Nanaimo, B.C.	Victoria, B.C.	15 00
8197	" 5	Carl Elias Knudsen	Mate	Louisburg, C.B.	North Sydney, N.S.	6 00
8198	" 5	Noah Hutton Urquhart	Master	St. John, N.B.	St. John, N.P.	15 00
8199	" 5	Richard James Gilbert	Master	Halifax, N.S.	Halifax, N.S.	15 00
8200	" 5	James A. D. Anthony	Master	"	"	15 00
8201	" 5	Samuel Wright	Master	Port Arthur, Ont.	Toronto, Ont.	15 00
8202	" 5	George William H. Sixsmith.	Master.....	Toronto, Ont.	"	15 00
8203	" 9	John Piroon	Mate	Halifax, N.S.	Halifax, N.S.	6 00
8204	" 15	Leo Barton Home	Master	Dartmouth, N.S.	"	15 00
8205	" 15	Johs Adolf Larsen	Mate	North Vancouver, B.C.	Victoria, B.C.	6 00
8206	" 15	James A. Morrison...	Master	Prince Rupert, B.C.	Prince Rupert, B.C.	15 00
8207	" 15	William John Owen	Master.....	Albion, B.C.	Vancouver, B.C.	15 00
8208	" 19	Ernst Emil Moller.	Master	Ocean Falls, B.C.	Prince Rupert, B.C.	15 00
8209	" 24	Edgar Wallace Rankin.	Mate.	Montreal, P.Q.	Montreal, P. Q.	6 00
8210	Sept 5	Joseph Beaudouin	Master.....	Arrowhead, B.C.	Arrowhead, B.C.	15 00
8211	" 6	John Algot Henrickson..	Mate.	Truro, N.S.	Halifax, N.S.	6 00
8212	" 6	Herbert Elerton Smith.	Mate.	Halifax, N.S.	"	6 00
8213	" 12	Levy Leo Mallett	Master	Yarmouth, N.S.	Yarmouth, N.S.	15 00
8214	" 18	Archer Valentine Gibson	Mate....	North Vancouver, B.C.	Vancouver, B.C.	6 00
8215	" 26	Hubert Pettipas..	Master...	Halifax, N.S.	Halifax, N.S.	15 00
8216	" 26	William Kennedy..	Master	New Westminster, B.C.	Victoria, B.C.	15 00
8217	" 26	Charles Herbert Sargeant	Mate	Halifax, N.S.	Halifax, N.S.	6 00
8218	" 26	Charles Lebeaud	Master.....	Valleyfield, P.Q.	Montreal, P.Q.	15 00
8219	" 26	Rupert Taylor.....	Mate	St. John, N.B.	St. John, N.B.	6 00
8220	" "	Frank Meehan..	Mate	Vancouver, B.C.	Vancouver, B.C.	15 00
8221	" 2	Arthur E. Clouston..	Master.....	"	"	15 00
8222	" 10	Seymour Zinck.	Master	Charlottetown, N.S.	Yarmouth, N.S.	15 00
8223	" 10	Ralph Mortimer Johnson	Mate	Rush Hill, Barbados.	St. John, N.B.	6 00
8224	" 10	Robert Irwin Swansburg	Master	Halifax, N.S.	Halifax, N.S.	15 00
8225	" 11	Donald Macdonald	Mate.	Montreal, P.Q.	"	6 00
8226	" 11	Arthur Dunn	Mate	Halifax, N.S.	"	6 00
8227	" 13	William Walter Munro	Master	Vancouver, B.C.	Victoria, B.C.	15 00
8228	" 13	William Walter Munro	Mate	"	"	6 00
8229	" 23	Marion Arthur O'Connell	Master.....	"	Vancouver, B.C.	15 00
8230	" 25	Charles W. Hammond	Mate	Pictou, Ont.	Pictou, Ont.	15 00
8231	" 23	William P. Brown	Mate	Charlottetown, Ont.	Charlottetown, Ont.	15 00
8232	" 24	William P. Brown	Mate	Vancouver, B.C.	Vancouver, B.C.	15 00
8233	" 26	William P. Brown	Mate	Halifax, N.S.	Halifax, N.S.	6 00
8234	" 27	William P. Brown	Master.	Montreal, P.Q.	Montreal, P.Q.	15 00
8235	" 27	William P. Brown	Master.	Halifax, N.S.	Halifax, N.S.	15 00
8236	" 27	William P. Brown	Mate	"	"	6 00
8237	" 27	William P. Brown	Master.	"	"	15 00
8238	" 27	William P. Brown	Master.	Parrsboro, N.S.	"	15 00
8239	" 30	Leo Patrick Pelrine...	Mate	Halifax, N.S.	"	6 00
8240	Nov. 3	William P. Brown	Mate	"	"	6 00
8241	" 7	William P. Brown	Master.....	Prince Rupert, B.C.	Prince Rupert, B.C.	15 00
8242	" 11	Joseph Victor G. E. Koenig.	Mate	Quebec, P.Q.	Quebec, P.Q.	6 00

SESSIONAL PAPER No. 21

List of Certificates of Competency issued to Masters and Mates of Coasting and Inland Waters vessels during the twelve months ended March 31, 1917.—*Continued.*

No. of Certificate.	Date of Certificate.	Name.	Grade.	Address.	Where Examination was Passed.	Fee.
	1916.					\$ cts.
8243	Nov. 13...	Lewis Royal Morton.	Master..	Lethbridge, Alberta..	Edmonton, Alta..	15 00
8244	" 18...	Scott Darrell Guptill...	Mate.....	Grand Harbour, N.B.	St. John, N.B.....	6 00
8245	" 25...	Svend Bertel E. P. Svendsen.	Mate.....	Prince Rupert, B.C..	Prince Rupert, B.C.	6 00
8246	" 25	Henry Francis McGuirk	Master.	Halifax, N.S.....	Halifax, N.S.	15 00
8247	" 25	Olaf Swanson	Master..	"	"	15 00
8248	" 28	Charles Anderson.	Mate	Vancouver, B.C..	Vancouver, B.C..	6 00
8249	" 28...	Louis Howard Burmister	Master..	Collingwood, Ont.....	Collingwood, Ont.	15 00
8250	Dec. 7	Ulysse Joseph D'Entremont.	Master.	Yarmouth, N.S.	Yarmouth, N.S.	15 00
8251	" 9	Charles Roland Teed..	Master.	Freeport, N.S.	St. John, N.B.	15 00
8252	" 12	Ernest George Alcock...	Mate.	Esquimalt, B.C.	Victoria, B.C.	6 00
8253	" 12..	Charles Tikkas	Master.	Prince Rupert, B.C...	Prince Rupert, B.C.	15 00
8254	" 16.	William Ralph Chandler	Mate	Halifax, N.S.	Halifax, N.S.	6 00
8255	" 19...	Thomas Hembrough....	Master.	New Westminster, B.C.	Vancouver, B.C..	15 00
8256	" 19.	Thomas Campbell	Master.	Vancouver, B.C.	"	15 00
8257	" 19	Thomas Campbell.	Mate	"	"	6 00
8258	" 19...	Edmund James Parsons.	Master.....	Victoria, B.C.,.....	Victoria, B.C.....	15 00
8259	" 19.	Edmund James Parsons.	Mate	"	"	6 00
8260	" 20	George Edwin Fraser.	Mate	Bent River, Ont	Collingwood, Ont.	6 00
8261	" 27	Edward C. Keeling	Master.....	North Vancouver, B.C.	Vancouver, B.C..	15 00
8262	" 27...	Nelson William Miner...	Master.....	Parry Sound, Ont.....	Toronto, Ont.....	15 00
8263	" 28...	Thomas Robert McLay.	Master.....	Nanaimo, B.C.....	Victoria, B.C.....	15 00
	1917.					
8264	Jan. 3...	Joseph T. Marchand	Master.....	Champlain, P.Q.	Quebec, P.Q.	15 00
8265	" 3..	Willie Deschenes...	Master.....	Ste. Anne, P.Q.....	"	15 00
8266	" 3	Norman Howard Pentz.	Master..	Lower Dublin, N.S...	Halifax, N.S.	15 00
8267	" 3	Norman Howard Pentz.	Mate	"	"	6 00
8268	" 4	Bernhard Slinning...	Master.	Victoria, B.C.	Victoria, B.C.	15 00
8269	" 4..	Ernest Vezina.....	Master.	St. Michel, P.Q.....	Quebec, P.Q.....	15 00
8270	" 4...	Frederick R. Merriam..	Master.....	Port Greville, N.S...	Halifax, N.S.....	15 00
8271	" 8	Robert Bruce Angus	Master..	Toronto, Ont	Toronto, Ont.	15 00
8272	" 8	Robert Bruce Angus	Mate	"	"	6 00
8273	" 13...	William Curtis Jordan...	Master.	Collingwood, Ont.....	Collingwood, Ont.	15 00
8274	" 13..	Arthur Neyle Edwards	Master.	Vancouver, B.C.	Vancouver, B.C..	15 00
8275	" 13.	Arthur Neyle Edwards	Mate	"	"	6 00
8276	" 13	William Marwick.	Master..	Goderich, Ont	Toronto, Ont..	15 00
8277	" 16.	Harris Horatio Brannen	Mate.....	Halifax, N.S.....	Halifax, N.S.....	6 00
8278	" 16	James Sinclair	Mate	Vancouver, B.C..	Vancouver, B.C..	6 00
8279	" 16.	John Leisk Malcolmson.	Mate.	"	"	6 00
8280	" 23.	William Whitworth.....	Master..	Ladner, B.C.....	"	15 00
8281	" 23.	William Whitworth...	Mate	"	"	6 00
8282	" 23.	Charles Ephraim Larkin	Master..	Prince Rupert, B.C..	Prince Rupert, B.C.	15 00
8283	" 23.	Joseph Anselme Houde..	Mate.....	Ste. Emilie, P.Q.	Quebec, P.Q..	6 00
8284	" 23...	Harry James Carter...	Master..	Forth William, Ont...	Toronto, Ont.	15 00
8285	" 23...	Harry James Carter	Master..	"	"	15 00
8286	" 23	Robert Asahel Wright	Mate	Sarnia, Ont..	"	6 00
8287	" 23...	Charles Alex. Moore..	Master...	Mar P.O., Ont.....	"	15 00
8288	" 23..	James Mark Preston..	Master...	Warton, Ont.....	Collingwood, Ont.	15 00
8289	" 25..	George Anthony Mackay	Mate	St. Catharines, Ont...	Toronto, Ont..	6 00
8290	" 26	Gerald Roe.	Master..	Naramata, B.C.	Victoria, B.C.	15 00
8291	" 26.	James Alexander Bunn..	Mate.	Bognor, Ont.....	Collingwood, Ont.	6 00
8292	" 27	Albert Henry Blackwell.	Mate	Toronto, Ont..	Toronto, Ont.	6 00
8293	" 30...	Nicholas Vincent McCabe	Master..	Port Arthur, Ont.....	"	15 00
8294	" 30..	Nicholas Vincent McCabe	Mate.	"	"	6 00
8295	" 31..	Charles Robert Draney.	Master..	Vancouver, B.C..	Vancouver, B.C.	15 00
8296	" 31..	Wm. Ulrich Dauphinee	Master.....	New Westminster, BC	"	15 00
8297	" 31.	Elliott Lazier Fullerton	Master...	Vancouver, B.C.....	"	15 00

8 GEORGE V, A. 1918

List of Certificates of Competency issued to Masters and Mates of Coasting and Inland Waters vessels during the twelve months ended March 31, 1917.—*Continued.*

No. of Certificate.	Date of Certificate.	Name	Grade.	Address.	Where Examination was Passed.	Fee.
	1917.					\$ cts.
8298	Jan. 31.	Thomas Cooper..	Master..	New Westminster, B.C.	Victoria, B.C....	15 00
8299	" 31..	Malcolm Mackinnon...	Mate	Vancouver, B.C..	"	15 00
8300	" 31..	Archibald John McDonald.	Master.	Toronto, Ont	Toronto, Ont....	6 00
8301	Feb. 6	Norman Neel..	Master....	North Sydney, N.S...	North Sydney, N.S.	15 00
8302	" 5...	Joseph Albain Nungau	Master....	Sorel, P.Q.	Quebec, P.Q.....	15 00
8303	" 6.	Alexander Smith..	Mate.....	Dartmouth, N.S.....	Halifax, N.S.	6 00
8304	" 6.	John Alexander Lethbridge.	Mate	Midland, Ont	Collingwood, Ont.	6 00
8305	" 6..	Howard Reid..	Mate	Oliphant, Ont.	Toronto, Ont..	6 00
8306	" 7	Joseph Ernest Bouliane	Master..	Hull, P.Q.....	Quebec, P.Q.	15 00
8307	" 7.	Rosario Mondor..	Master..	Lanoraie, P.Q..	"	15 00
8308	" 7...	Joseph Alphonse Lepine.	Master..	Ste. Anne de Bellevue, P.Q.	"	15 00
8309	" 7...	Henry Bruce McCormac	Mate.	Yarmouth, N.S.	Yarmouth, N.S..	6 00
8310	" 7	Oliva Joseph Beaudoin.	Mate	Midland, Ont	Toronto, Ont..	6 00
8311	" 7...	Harry Huggins..	Mate	Vancouver, B.C.	Vancouver, B.C..	6 00
8312	" 7...	James Samuel Menchions	Master..	"	"	15 00
8313	" 9	Herman Archibald Martin.	Mate	"	"	6 00
8314	" 14..	Louis Dugre	Master..	Montreal, P.Q.	Quebec, P.Q.	15 00
8315	" 14..	Roland Normandeau....	Master.....	Deschaillons, P.Q.....	"	15 00
8316	" 14	Louis Joseph Patenaude	Mate	Montreal, P.Q.	"	6 00
8317	" 14.	Ludger Marchand...	Master..	Champlain, P.Q.	"	15 00
8318	" 14...	Charles Cogdian.	Master..	White Horse, Y.T...	Victoria, B.C.	15 00
8319	" 14	Thomas Patrick Murphy	Master.	Kingston, Ont	Kingston, Ont....	15 00
8320	" 14..	Charles Livingston Ross	Master.....	Portsmouth, Ont.....	"	15 00
8321	" 14	William James McKenna	Master..	Kingston, Ont..	"	15 00
8322	" 14	Nerec Legault	Master..	Ste. Anne de Bellevue, P.Q.	"	15 00
8323	" 14	David Ooty Lunn.	Master..	West Vancouver, B.C.	Vancouver, B.C..	15 00
8324	" 17...	Eugene Fortin..	Master..	L'Islet, P.Q.....	Halifax, N.S.	15 00
8325	" 17.	Thomas McLeod	Mate	Tara, Ont.....	Toronto, Ont..	6 00
8326	" 17...	William Nelson Williams	Mate	Kingston, Ont.....	"	6 00
8327	" 17..	Carl Hilmer Hermanson	Mate.....	Sarnia, Ont.....	"	6 00
8328	" 17	Edward Narvev Kirby.	Master..	Long Harbour, N.S.	Halifax, N.S....	15 00
8329	" 26	Arthur Messenger Gower	Master.....	St. John, N.B...	St. John, N.B...	15 00
8330	" 26	James MacLeod.....	Master...	Vancouver, B.C..	Vancouver, B.C..	15 00
8331	" 26.	James MacLeod...	Mate.....	"	"	6 00
8332	" 26.	Donald McKay..	Master	White Horse, Y.T	"	15 00
8333	" 26	William Gallagher	Master.	Halifax, N.S.	Halifax, N.S..	15 00
8334	" 26	William Elias Bennett	Mate	"	"	6 00
8335	" 26	Berton Miller Balcom	Master	"	"	15 00
8336	" 26	Berton Miller Balcom..	Mate.	"	"	6 00
8337	" 26.	Ernest Griesbach...	Mate	Collingwood, Ont	Collingwood, Ont.	6 00
8338	" 26.	Leon Arsenio Larue	Mate.....	Quebec, P.Q..	Quebec, P.Q..	6 00
8339	" 26	Francois Xavier L. LaBrosse	Mate.	St. Laurent, P.Q.	"	6 00
8340	" 26	Frederick John Mangold	Master..	Toronto, Ont.	Toronto, Ont....	15 00
8341	" 26	Walter Ezra Hemphill	Master..	"	"	15 00
8342	" 26	Edward Corcoran...	Master.	St. Catharines, Ont...	"	15 00
8343	" 28	Joseph Leon P. Gaud	Mate	St. Thomas Montmagny, P.Q.	Quebec, P.Q.	6 00
8344	" 28	Barthelemy Joseph Houde.	Master.....	St. Gregoire, P.Q.	"	15 00
8345	" 28	Joseph Aime Romeo Houde.	Master....	Ste. Antoine de Tilly, P.Q.	"	15 00
8346	" 28	Joseph Aime Romeo Houde.	Mate.....	St. Antoine de Tilly, P.Q.	"	6 00
8347	" 28	Joseph Zestique Bibeau	Master.....	Sorel, P.Q.	"	15 00
8348	" 28	Alfred Leduc	Mate	Ile du Pas, P.Q..	"	6 00
8349	" 28	Joseph Arthur Pelapue	Master	Ste. Anne de Sorel, P.Q.	"	15 00

SESSIONAL PAPER No. 21

List of Certificates of Competency issued to Masters and Mates of Coasting and Inland Waters vessels during the twelve months ended March 31, 1917.—*Continued.*

No. of Certificate.	Date of Certificate.	Name.	Grade.	Address.	Where Examination was Passed.	Fee.
	1917.					\$ cts.
8350	Feb. 28..	Ewen Morrison.....	Mate.....	White Horse, Y.T....	Vancouver, B.C....	6 00
8351	" 28..	Henry Lavers.....	Master.....	Collingwood, Ont....	Collingwood, Ont....	15 00
8352	Mar. 10..	George Lablanc.....	Mate.....	Charlottetown, P.E.I.	Charlottetown, P.E.I.	6 00
8353	" 10..	Joseph Kennedy Carson.	Mate.....	Collingwood, Ont....	Collingwood, Ont....	6 00
8354	" 10..	John Dutton.....	Mate.....	Victoria, B.C.....	Victoria, B.C.....	6 00
8355	" 10..	Stanley Howse.....	Master.....	Vancouver, B.C.....	Vancouver, B.C....	15 00
8356	" 10..	Stanley Howse.....	Mate.....	"	"	6 00
8357	" 10..	Joseph Lucien Horace Leveille.	Master.....	Batiscan, P.Q.....	Quebec, P.Q....	15 00
8358	" 10..	Joseph Camille Biron...	Mate.....	Ste. Croix Lotbiniere, P.Q.	"	6 00
8259	" 10..	Frederick Ferguson Foote	Master.....	Fergus, Ont.....	Toronto, Ont....	15 00
8360	" 10..	George Clinton Kirk...	Master.....	Lake Port, Ont.....	"	15 00
8361	" 10..	Charles William Calcutt	Master.....	Harwood, Ont.....	"	15 00
8362	" 10..	Guy Angus Parks.....	Mate.....	Parks Creek, N.S....	Halifax, N.S....	6 00
8363	" 10..	Wallace Clayton Lloyd..	Mate.....	Halifax, N.S.....	"	6 00
8364	" 10..	James Timothy Gooding	Mate.....	"	"	6 00
8365	" 10..	Edmund Baquet dit Lamontagne.	Mate.....	Levis, P.Q.....	Quebec, P.Q....	6 00
8366	" 14..	James Roach.....	Master.....	Southport, P.E.I....	Charlottetown, P.E.I.	15 00
8367	" 14..	Perry Edward Walters..	Master.....	Lunenburg, N.S.....	Halifax, N.S....	15 00
8368	" 14..	Perry Edward Walters..	Mate.....	"	"	6 00
8369	" 14..	Isaac Walton Horton....	Master.....	Halifax, N.S.....	"	15 00
8370	" 14..	William Ralph Munroe..	Master.....	"	"	15 00
8371	" 14..	Creighton Anley Haughn	Mate.....	East Middle LaHave, N.S.	"	6 00
8372	" 14..	William Douglas Pearl..	Master.....	Mahone Bay, N.S....	"	15 00
8373	" 14..	Ernest Myrden Sheppard	Master.....	Vancouver, B.C.....	Vancouver, B.C....	15 00
8374	" 14..	Ernest Myrden Sheppard	Mate.....	"	"	6 00
8375	Mar. 14..	Simeon Noel.....	Master.....	Victoria, B.C.....	Victoria, B.C....	15 00
8376	" 14..	Neree Legault.....	Mate.....	St. Anne de Bellevue, P.Q.	Kingston, Ont.	6 00
8377	" 14..	Michael Wilfred Kenney	Mate.....	Jone's Falls, Ont.....	"	6 00
8378	" 14..	David Cummins.....	Master.....	Kingston, Ont.....	"	15 00
8379	" 14..	Ernest Bailey.....	Mate.....	Edmonton, Alta.....	Edmonton, Alta	6 00
8380	" 14..	Robert Pamphlet.....	Master.....	Victoria, B.C.....	Victoria, B.C....	15 00
8381	" 22..	Howard Percil Bayers..	Master.....	Dartmouth, N.S.....	Halifax, N.S....	15 00
8382	" 22..	John Gault Murray.....	Master.....	Port Richmond, C.B. N.S.	"	15 00
8383	" 22..	John Gault Murray.....	Mate.....	"	"	6 00
8384	" 22..	William Blake.....	Master.....	Toronto, Ont.....	Toronto, Ont....	15 00
8385	" 22..	Thomas John Carson....	Mate.....	Midland, Ont.....	"	6 00
8386	" 22..	John Boyd Rintoul.....	Master.....	Sault Ste. Marie, Ont.	"	15 00
8387	" 22..	John Boyd Rintoul.....	Mate.....	"	"	6 00
8388	" 22..	Aubrey John Haughn...	Mate.....	East Middle Lahave, N.S.	Halifax, N.S....	6 00
8389	" 22..	John Harold Hudson....	Master.....	Midland, Ont.....	Toronto, Ont....	15 00
8390	" 22..	Perry Robert Parks....	Master.....	Parks Creek, N.S....	Halifax, N.S....	15 00
8391	" 22..	Lehman Yorke Wentzel.	Mate.....	Riverport, N.S....	"	6 00
8392	" 22..	Louis Edmond Pouliot..	Mate.....	Chateau Richer, P.Q.	Quebec, P.Q.....	6 00
8393	" 22..	Louis Dicks.....	Master.....	Halifax, N.S.....	Halifax, N.S....	15 00
8394	" 29..	Joseph Emile Mercier...	Mate.....	Riviere Ouelle, P.Q...	Quebec, P.Q.....	6 00
8395	" 29..	Albert Bouvier.....	Mate.....	Montreal, P.Q.....	Montreal, P.Q.	6 00
8396	" 29..	Joseph Leandre Ludger Blais.	Mate.....	Berthier, P.Q.....	Quebec, P.Q....	6 00
8397	" 29..	Rodolphe Tremblay....	Mate.....	Pointe à Pic, P.Q.....	"	6 00
8398	" 29..	William Gleeson.....	Master.....	Vancouver, B.C.....	Vancouver, B.C..	15 00
8399	" 29..	William Gleeson.....	Mate.....	"	"	6 00
8400	" 29..	Charles Ernest Rush....	Mate.....	Owen Sound, Ont.....	Toronto, Ont....	6 00
8401	" 29..	Raymond Allain Hand..	Master.....	Port Dalhousie, Ont..	"	15 00
8402	" 31..	James William Deal....	Master.....	Riverport, N.S.....	Halifax, N.S....	15 00

8 GEORGE V, A. 1918

List of Certificates of Competency issued to Masters and Mates of Coasting and Inland Waters vessels during the twelve months ended March 31, 1917.—Continued.

No. of Certificate.	Date of Certificate.	Name.	Grade.	Address.	Where Examination was Passed.	Fee.
	1917.					\$ cts.
8403	Mar. 31.	James William Deal...	Mate.	Riverport, N.S.	Halifax, N.S....	6 00
8404	" 31	Frederick Richard Jan- maki.	Master.	Nanaimo, B.C.	Vancouver, B.C..	15 00
8405	" 31	Ernest James Shannon..	Mate.....	Collingwood, Ont.....	Collingwood, Ont.	6 00
8406	" 31	Arthur Arrow	Mate	Nanaimo, B.C.....	Vicotria, B.C...	6 00
8407	" 31	James Alexander Cuth- bert.	Mate.....	Lake Port, Ont.....	Toronto, Ont.....	6 00
8408	" 31.	Peter Francis McCarthy	Mate.....	Toronto, Ont.....	"	6 00

List of Masters' Temporary Certificates issued during the twelve months ended March 31, 1917.

142	April 25...	Ellis Edmon Smalley...	Master.....	Athabaska, Alta....	Edmonton, Alb...	5 00
143	" 26...	Samuel Carson	Master.	Roberval, P.Q.		5 00
144	" 26...	George Finan.....	Master.	Braeside, Ont.....		5 00
145	May 3...	Charles McLeod	Master	Chamberland, Ont.		5 00
146	" 4	John Albert Cook	Master.	Grenville, P.Q.....		5 00
147	" 5...	Thomas Edgar Drolet.	Master.....	Midland, Ont.....	Toronto, Ont.....	5 00
148	" 10...	Albert Franklin Stanton	Master.....	Port Stanton, Ont....	Collingwood, Ont.	5 00
149	" 26	James Jackson	Master	Indian White Horse, Y.T.		5 00
150	June 8...	William Martin.....	Master	Fort Francis, Ont....	Kenora, Ont..	5 00
151	" 12...	Alfred Brown.....	Master.....	Clark Harbor, N.S....	Yarmouth, N.S..	5 00
152	" 13...	Pringle Aschlin	Master.....	Calumet Island, P.Q..	Ottawa, Ont....	5 00
153	" 21...	John Stanley	Master	Banff, Alta.		5 00
154	" 22	Samuel Frederick Hall	Master	Arrowhead, B.C.		5 00
155	" 22...	Charles Leo Sweet	Master.....	Moon Falls, Ont.....	Parry Sound, Ont.	5 00
156	" 22...	Fred Gregoire.....	Master.....	"	"	5 00
157	" 22...	Peter Gregoire.....	Master	"	"	5 00
158	" 24.	Joseph Deschenes...	Master.....	Arnprior, Ont.....	Toronto, Ont.....	5 00
159	" 27	William Pender	Master	Glenora, Ont.		5 00
160	July 5	Stephen Leighton Van- Dusen.	Master.....	Trenton, Ont.....	Toronto, Ont.	5 00
161	" 19	John Duff	Master.....	Banff, Alta...	Kenora, Ont..	5 00
162	" 28...	Telesphore M. Martin..	Master.....	Pointe Fortune, P.Q.		5 00
163	Aug 14	George Madigan.	Master.....	Parry Sound, Ont.....	Toronto, Ont.....	5 00
164	" 15	Auguste Duchene..	Master	St. Irene, P.Q.....		5 00
165	" 18	Albert Allen Jones	Master	Cornwall, Ont.....		5 00
166	" 21.	Francis Thomas Dodds.	Master.....	Kenora, Ont.....		5 00
167	" 21	Francois Xavier Mailly..	Master	St. Pierre des Bee- quets, P.Q.	Quebec, P.Q...	5 00
168	Sept. 1	William James Johnston	Master	Vernon, B.C..	Vernon, B.C.	5 00
169	" 1	James Macdonald	Master	Fort George, B.C.....	Victoria, B.C.	5 00
170	" 8	Andre Chretien...	Master	Fassett, P.Q....	Ottawa, Ont..	5 00
171	" 26.	Andre Joseph A. La-	Master.	Masson, P.Q.....	Quebec, P.Q.	5 00
172	Oct. 13.	James Ferguson	Master	Bracebridge, Ont	Toronto, Ont.	5 00
173	" 16	Joseph Dusome..	Master....	Bracebridge, Ont		5 00
174	" 17	James Ferguson	Master	Grandes Piles, P.Q..		5 00
175	" 18	James Smith	Master	"		5 00
176	" 29	Leonard Augustine Hay-	Master..	Kelowna, B.C.	Vancouver, B.C..	5 00
177	1917 Jan. 13..	Samuel Germain.	Master	Masson, P.Q.	Masson, P.Q.	5 00
178	" 17	James Ferguson	Master	Carcross, Yukon....		5 00
179	Feb. 8	Yves Macdonald	Master	St. Jean Deschailons, P.Q.	Quebec, P.Q.	5 00
180	" 8	James Ferguson	Master.....	Grandes Piles, P.Q..		5 00
181	" 14	Yves Macdonald	Master.....	Mistassini, P.Q.	Montreal, P.Q.	5 00
182	March 7	James Ferguson	Master	Gatineau Point, P.Q..	Ottawa, Ont	5 00
183	" 22	James Ferguson	Master.....	Frankford, Ont	Toronto, Ont.....	5 00
184	" 28.	James Macdonald	Master	Rainy River, Ont....		5 00

SESSIONAL PAPER No. 21

APPENDIX.

EXTRACTS FROM THE ANNUAL RETURNS OF PILOTAGE AUTHORITIES
FOR THE CALENDAR YEAR 1916.

PILOTAGE DISTRICT OF MONTREAL

(The Minister of Marine and Fisheries is the Pilotage Authority.)

Pilots.	Date of Appointment.	Age.	Net Earnings.
1 L. Z. Bouille.....	Jan. 15, 1878	67	\$ 1,778 79
2 Laurent Gauthier.....	Dec. 10, 1879	66	2,192 01
3 Delavoie Nault.....	Dec. 10, 1879	63	1,479 57
4 Wilbrod Gauthier.....	Dec. 10, 1879	64	2,252 96
5 Norbert Arcand.....	Dec. 10, 1880	64	1,260 65
6 Tancrede Bouille.....	Dec. 11, 1880	63	1,776 96
7 Wilfrid Raymond.....	April 20, 1888	62	2,186 17
8 J. P. Hurteau.....	Mar. 20, 1889	55	1,768 45
9 Edouard Perreault.....	Mar. 20, 1889	66	1,127 73
10 Honore Dussault.....	July 16, 1889	63	1,271 74
11 Arthur Briere.....	April 28, 1891	60	2,809 86
12 Alexis Perreault.....	April 28, 1891	53	2,642 22
13 Come Dufresne.....	June 28, 1891	56	2,132 83
14 Aubert Naud.....	July 11, 1893	63	1,582 96
15 Nap. Dussault.....	April 3, 1894	55	2,231 89
16 Prudent Bellisle.....	April 3, 1894	53	1,767 47
17 Georges Arcand.....	April 3, 1894	51	1,950 72
18 Constant Toupin.....	April 3, 1894	50	1,635 44
19 Georges Perreault.....	Sept. 11, 1894	51	1,928 51
20 Narcisse Bouille.....	Oct. 9, 1894	56	1,065 50
21 Joseph Leveille.....	June 18, 1895	52	2,264 40
22 Severe Perron.....	April 14, 1896	58	1,803 97
23 Alberic Angers.....	Mar. 15, 1898	42	2,310 22
24 Arthur Belisle.....	Sept. 20, 1898	53	1,748 23
25 G. T. Hamelin.....	Sept. 20, 1898	41	2,024 73
26 Anthyme Perreault.....	May 1, 1900	48	2,408 85
27 Jos. N. Raymond.....	Oct. 4, 1900	46	2,279 36
28 J. Henri Bourassa.....	April 16, 1901	38	2,552 85
29 E. A. Paquin.....	June 23, 1902	42	1,925 02
30 J. M. Labranche.....	June 23, 1902	42	2,128 70
31 Damien Paquet.....	Feb. 4, 1903	42	1,916 86
32 J. Arthur Gariepy.....	April 20, 1903	37	2,051 62
33 Albert Gagnon.....	Nov. 30, 1903	41	1,980 10
34 J. Oswald Frenette.....	Mar. 26, 1906	40	1,754 05
35 C. B. Hamelin.....	June 8, 1906	37	1,955 30
36 Tanc. Perron.....	Dec. 1, 1906	38	2,314 95
37 J. Delavoie Frenette.....	April 1, 1907	38	2,287 19
38 Fortunate Hamelin.....	April 20, 1907	38	2,168 24
39 J. Cyriac Gauthier.....	July 3, 1907	36	2,391 25
40 J. B. Angers.....	July 7, 1908	36	2,060 49
41 D. J. Perreault.....	Jan. 15, 1909	36	1,690 61
42 Napoleon Lechance.....	June 4, 1909	42	2,243 79
43 Henri Bouille.....	June 30, 1909	32	2,041 64
44 Theode Perron.....	Aug. 1, 1909	33	2,577 43
45 Bona Dussault.....	May 2, 1910	34	1,039 94
46 J. Arthur Arcand.....	Aug. 2, 1910	33	1,686 74
47 F. N. Rivard.....	April 10, 1911	36	1,850 47
48 Joseph A. Mayrand.....	Sept. 16, 1913	34	2,108 83
49 Jules Briere.....	Nov. 4, 1914	30	2,271 93
50 Napoleon de Villers.....	Dec. 7, 1915	30	2,193 50
			\$ 98,873 69
Gross pilotage dues collected.....			\$ 104,102 62
Amount paid to Pension Fund.....			5,228 93
Net earnings.....			98,873 69

\$308.75 paid by vessels which did not take a pilot was turned over to the Pension Fund.
The 5 per cent for the Pension Fund is not deducted from the receipts for movages.

PILOTAGE DISTRICT OF MONTREAL—Continued.

APPRENTICE PILOTS.	Date of Appointment.	Age.
1 Achille Gosselin.....	Dec. 30, 1903	31
2 Armand Marchand.....	Dec. 30, 1903	30
3 Donat Paquette.....	Dec. 30, 1903	32
4 Edmond Lacroix.....	Dec. 30, 1903	31
5 Thomas Houde.....	Dec. 30, 1903	31
6 Cyprien Marchand.....	Dec. 30, 1903	30
7 Emilien Naud.....	Dec. 30, 1903	30
8 Joseph Perreault.....	Nov. 1, 1907	27
9 Oscar Perron.....	May 15, 1907	30
10 Edmond de Villers.....	Mar. 31, 1908	28
11 Horace Leveille.....	May 6, 1908	25
12 Andre Gauthier.....	Sept. 17, 1908	24
13 Arthur de Villers.....	May 10, 1909	26
14 Chas. Aug. de la Chevrotiere	Aug. 31, 1909	26
15 Alphonse Halle.....	Oct. 14, 1909	23

SHIPS PILOTED.	Number.
British vessels.....	1,719
American vessels...	133
Norwegian vessels.	70
Danish vessels.....	12
Italian vessels.....	29
Belgian vessels.....	2
French vessels.....	17
Nicaraguan vessels	2
Uruguayan vessels.	2
	1,946

Total registered tonnage of these vessels..... 4,919,991

DECAYED PILOTS PENSION FUND.

Five per cent is deducted from the pilot's earnings in the Montreal District for the Montreal Decayed Pilots' Pension Fund. This Fund is administered by the Dominion Government and disbursed by the Department of Finance.

SESSIONAL PAPER No. 21

PILOTAGE DISTRICT OF MONTREAL—Continued.

PENSIONERS FOR THE CALENDAR YEAR, 1916.

		Received per annum.
1	Widow Alexis Gauthier.....	\$ 131 67
2	" Octave J. Hamelin.....	149 43
3	" David Mathieu.....	131 67
4	" Edouard Naud.....	131 67
5	" Jean Nault.....	131 67
6	" Elzear Bellisle.....	149 43
7	" Zephirin Bouille.....	149 43
8	" Cyrille Bellisle.....	122 77
9	" Joseph Pleau.....	149 43
10	" Nestor Arcand.....	149 43
11	" Alfred Frenette.....	149 43
12	" C. Lyderic Bouille.....	131 67
13	" G. Joseph Dussault.....	149 43
14	" Celestin Brunet.....	149 43
15	" L. A. Bouille.....	149 43
16	" Joseph Chandonnet.....	149 43
17	" Onesime Naud.....	149 43
18	" Georges Dufresne.....	149 43
19	" Louis Mayrand.....	131 67
20	" Alfred St. Amant.....	136 99
21	Retired Pilot Jean Arcand.....	300 00
22	" Philippe Belanger.....	300 00
23	" Liboire Perreault.....	300 00
24	" Gedeon Groleau.....	300 00
25	" Nere Bellisle.....	300 00
26	" Narcisse Perreault.....	300 00
27	" Ulric Groleau.....	300 00
28	" Prudent Beaudet.....	300 00
29	" S. C. Auger.....	300 00
30	" Ferdinand Labranche ..	300 00
31	" Alfred St. Amant.....	25 00

No. 31—Retired Pilot Alfred St. Amant died on the 17th November, 1915, pension \$300 per annum ceased on the 31st January, 1916. Then pension at the rate of \$149.32 per annum continued payable to his widow.

PILOTAGE RATES.

From the harbour of Quebec to Portneuf and the opposite side of the river St. Lawrence, or below Portneuf, and above the harbour of Quebec:—

For the pilotage of any vessel in tow or propelled by steam (except as hereinafter mentioned), for each foot of draught of water:—

Upwards.. . . .	\$0 50
Downwards.. . . .	50

For the pilotage of any inland or coasting vessel propelled by steam, for each foot of draught of water:—

Upwards.. . . .	\$0 62½
Downwards.. . . .	62½

For the pilotage of any sea-going vessel propelled by steam, for each foot of draught of water:—

Upwards.. . . .	\$0 75
Downwards.. . . .	75

For the pilotage of any vessel under sail, for each foot of draught of water:—

Upwards.. . . .	\$1 05
Downwards.. . . .	70

From the harbour of Quebec to Three Rivers and the opposite side of the river St. Lawrence or any place above Portneuf and below Three Rivers:—

For the pilotage of any vessel in tow, or propelled by steam (except as hereinafter mentioned), for each foot of draught of water:—

Upwards.. . . .	\$1 50
Downwards.. . . .	1 50

For the pilotage of any inland or coasting vessel propelled by steam, for each foot of draught of water:—

Upwards.. . . .	\$1 75
Downwards.. . . .	1 75

PILOTAGE DISTRICT OF MONTREAL—*Concluded.*

For the pilotage of any sea-going vessel propelled by steam, for each foot of draught of water:—
Upwards.. .. \$2 10
Downwards.. .. 2 10

For the pilotage of any vessel under sail, for each foot of draught of water:—
Upwards.. .. \$2 60
Downwards.. .. 1 90

From the harbour of Quebec to Sorel and the opposite side of the river St. Lawrence, or any place above Three Rivers and below Sorel:—

For the pilotage of any vessel in tow, or propelled by steam (except as hereinafter mentioned), for each foot of draught of water:—
Upwards.. .. \$1 50
Downwards.. .. 1 50

For the pilotage of any inland or coasting vessel propelled by steam, for each foot of draught of water:—
Upwards.. .. \$1 87
Downwards.. .. 1 87

For the pilotage of any sea-going vessel propelled by steam, for each foot of draught of water:—
Upwards.. .. \$2 25
Downwards.. .. 2 25

For the pilotage of any vessel under sail, for each foot of draught of water:—
Upwards.. .. \$3 15
Downwards.. .. 2 10

From the harbour of Quebec to the harbour of Montreal, or to any place above Sorel, and below the harbour of Montreal:—

For the pilotage of any vessel in tow, or propelled by steam (except as hereinafter mentioned), for each foot of draught of water:—
Upwards.. .. \$2 00
Downwards.. .. 2 00

For the pilotage of any inland or coasting vessel propelled by steam, for each foot of draught of water:—
Upwards.. .. \$2 50
Downwards.. .. 2 50

For the pilotage of any sea-going vessel propelled by steam, for each foot of draught of water:—
Upwards.. .. \$3 00
Downwards.. .. 3 00

For the pilotage of any vessel under sail, for each foot of draught of water:—
Upwards.. .. \$4 20
Downwards.. .. 2 80

From the harbour of Montreal to Sorel or to any place above Sorel, and from Sorel or any place above Sorel to the harbour of Montreal:—

For the pilotage of any inland or coasting vessel propelled by steam, for each foot of draught of water:—
Upwards.. .. \$1 00
Downwards.. .. 1 00

For the pilotage of any sea-going vessel propelled by steam, for each foot of draught of water:—
Upwards.. .. \$1 20
Downwards.. .. 1 20

Wharfage Fees.

For the removal of any vessel from one wharf to another within the limits of the harbour of Quebec and vice versa, a minimum fee shall be charged of.. .. \$20 00

For the removal of any vessel from one wharf to another within the limits of the harbour, or from any of the wharves into the Lachine canal, or out of the said canal to any wharves in the harbour, for each such service.. .. 5

SESSIONAL PAPER No. 21

PILOTAGE DISTRICT OF QUEBEC.

(The Minister of Marine and Fisheries is the Pilotage Authority.)

Pilots.	Date of Appointment.	Age.	Net Earnings.
			\$ cts
1 Isiode Noel, resigned June 2, 1916.....	Oct. 14, 1870	66	125 48
2 Narcisse Lavoie.....	Nov. 11, 1875	68	1,627 48
3 Onesime Noel.....	Aug. 9, 1876	64	1,565 88
4 F. X. Demeules.....	Aug. 9, 1876	64	1,739 22
5 L. H. Lapierre.....	Nov. 22, 1876	66	1,810 70
6 Jos. Eug. Lachance.....	Feb. 15, 1877	62	1,563 53
7 J. T. St. Laurent.....	June 20, 1877	65	1,898 60
8 J. V. Gourdeau.....	July 11, 1877	68	1,669 28
9 Adj. Baillargeon.....	April 17, 1878	63	1,720 15
10 Sam Rioux.....	May 8, 1878	64	1,649 17
11 Paul B. Lachance.....	April 23, 1879	61	1,577 00
12 Arcadius Jouvin.....	Oct. 1, 1879	57	1,755 04
13 Paul X. Lachance.....	Oct. 22, 1879	61	3,001 97
14 Joseph Pouliot.....	Oct. 22, 1879	60	1,894 92
15 Adjutor Lachance.....	Nov. 12, 1879	58	1,726 14
16 Francois Gaudreau.....	Mar. 23, 1881	65	1,986 53
17 Arthur Koenig.....	Mar. 23, 1881	66	1,841 74
18 Eugene Anctil.....	Mar. 23, 1881	59	1,717 77
19 Joseph Lachance.....	Mar. 23, 1881	63	1,888 29
20 Elzear Normand.....	Oct. 19, 1881	58	1,475 62
21 J. B. Bernier.....	Oct. 19, 1881	58	3,120 62
22 Joseph Paquet.....	Dec. 7, 1881	56	1,879 43
23 J. A. Lachance.....	May 25, 1882	56	1,096 07
24 Arthur Baillargeon.....	Oct. 11, 1882	60	1,290 64
25 Joseph Vezina.....	Nov. 29, 1882	58	1,674 24
26 John A. Irvine.....	May 30, 1883	61	1,926 38
27 Frederic Bouffard.....	Aug. 2, 1883	60	1,561 01
28 Jules Asselin.....	Aug. 2, 1883	55	1,608 53
29 Lucien Lachance.....	April 12, 1884	55	1,110 41
30 Camille Bernier.....	July 16, 1884	59	2,131 03
31 Moise Blouin.....	July 16, 1884	66	1,377 01
32 Alfred Raymond.....	July 16, 1884	56	2,854 62
33 Philias Lachance.....	July 16, 1884	59	1,667 07
34 Joseph H. Talbot.....	July 27, 1887	57	1,957 03
35 M. Arthur Lachance.....	Feb. 13, 1888	53	1,769 66
36 Louis Frs. Thievierge.....	May 29, 1888	51	2,876 95
37 Alphonse Paquet.....	July 24, 1888	50	1,644 16
38 Adelard Bernier.....	Sept. 17, 1888	55	2,549 44
39 J. B. Pouliot.....	Aug. 16, 1899	48	3,092 11
40 Leonidas Lachance.....	Feb. 27, 1900	47	1,696 55
41 Eudore Langlois.....	Mar. 28, 1900	54	1,821 98
42 Joseph Delisle.....	July 20, 1904	45	1,621 00
43 Jules Lachance.....	July 20, 1904	36	1,707 77
44 Auguste Santerre.....	July 20, 1904	35	2,967 30
45 Arthur LaRochelle.....	July 20, 1904	37	2,846 31
46 Raoul Lachance.....	July 20, 1904	36	2,393 86
47 Wilhelm Langlois.....	July 20, 1904	38	1,411 85
48 Ernest Bernier.....	July 20, 1904	42	2,046 83
49 Arthur Baquet.....	July 20, 1904	35	124 39
50 Jules Lamarre.....	July 20, 1904	34	2,478 66
51 George LaRochelle.....	July 20, 1904	39	1,856 54
52 Adelard Delisle.....	July 20, 1904	38	1,669 63
53 Alexandre LaRochelle.....	Aug. 29, 1904	33	3,094 20
54 Arthur Paquet.....	May 22, 1905	40	1,678 92
55 J. A. Bernier.....	May 21, 1915	30	1,717 20
56 Bastien Anctil.....	May 21, 1915	27	1,597 42
57 Gabriel Lachance.....	May 21, 1915	26	1,791 94
58 Chas. H. Koeing.....	June 2, 1915	27	1,850 05
59 Ernest Pouliot.....	Sept. 9, 1915	25	1,546 23
60 Albert Lachance.....	April 18, 1916	26	1,986 88
61 Cyrille Pouliot.....	April 18, 1916	24	1,796 08
62 Louis G. Lavoie.....	July 10, 1916	24	1,466 05
			\$ 114,588 56

8 GEORGE V, A. 1918

PILOTAGE DISTRICT OF QUEBEC.—Continued.

Gross pilotage dues collected.....	\$	123,827 16
Amount paid to pension fund.....		9,238 60
Net earnings.....		114,588 56

\$613.44 paid by vessels which did not take a pilot was turned over to the pension fund.
\$6,408 was paid to special service pilots by the shipping companies as travelling expenses between Quebec and Father point.

Apprentice Pilots.	Date of Appointment.	Age.
1 P. P. Lachance.....	April 26, 1910	23
2 H. Bouffard.....	April 26, 1910	26
3 H. Lachance.....	April 26, 1910	24
4 G. Gaudreau.....	April 26, 1910	23
5 C. Couillard.....	April 26, 1910	24
6 L. Lachance.....	May 10, 1911	23
7 W. Pouliot.....	May 10, 1911	22
8 L. P. Langlois.....	May 10, 1911	23
9 R. Lachance.....	May 10, 1911	27
10 E. Baquet.....	May 10, 1911	22
11 L. Labrecque.....	May 10, 1911	23
12 E. Langlois.....	May 10, 1911	24
13 R. Gaudreau.....	May 10, 1911	27
14 E. Koenig.....	May 1, 1912	23
15 J. E. Bouffard.....	May 1, 1912	24
16 L. A. LaRue.....	May 1, 1912	23
17 Ed. Pouliot.....	Mar. 29, 1912	23
18 L. P. Couillard.....	May 1, 1912	23
19 J. H. L. R. Cloutier.....	Oct. 19, 1916	20
20 J. A. A. Belanger.....	Oct. 19, 1916	19
21 J. R. H. Bernier.....	Oct. 19, 1916	17
22 M. J. E. Gaudreau.....	Oct. 19, 1916	19
23 J. F. X. L. Pouliot.....	Oct. 19, 1916	16
24 J. D. A. Lachance.....	Oct. 19, 1916	17

<i>Ships Piloted</i>	<i>Number</i>
British steamers..	1,575
British sailing vessels..	3
American steamers..	112
American sailing vessels..	5
Norwegian steamers..	57
Norwegian sailing vessels..	2
Danish steamers..	30
French steamers..	11
Italian steamers..	29
Nicaraguan steamers..	3
Uruguayan steamers..	2
Belgian steamers..	1
Swedish steamers..	1
Russian steamers..	1
	1,832
Total registered tonnage of these vessels..	4,883,812

Decayed Pilots' Pension Fund.

Seven per cent is deducted from the pilot's earnings in the Quebec district for the "Quebec Decayed Pilots'" pension fund. This fund is managed and disbursed by the Quebec Pilots' Corporation.

Pensioners for the calendar year, 1916, paid out of the Quebec Pilots' Pensions Fund.

Thirty-one Pilots at \$300—

Raymond Baquet..	\$ 300 00
Arbel Bernier..	300 00
Theophile Corriveau..	300 00
J. Emile Couillard..	300 00
La. Treffe Delisle, pension from September 5, 1915..	345 64
La. Robert Demers..	300 00

SESSIONAL PAPER No. 21

PILOTAGE DISTRICT OF QUEBEC.—Continued.

Thirty-one Pilots at \$300—Concluded.

Elzear Desrosiers.. . . .	\$ 300 00
David Dumas, pension from April 1, 1916.. . . .	175 00
Joseph G. Dupil.. . . .	300 00
Alfred Gaudreau, pension from April 1, 1916.. . . .	175 00
Elzear Godbout.. . . .	300 00
Paul Gobeil.. . . .	300 00
Barthelemi Lachance.. . . .	300 00
Nestor Lachance.. . . .	300 00
Théodule Lachance.. . . .	300 00
Alfred Larochelle.. . . .	300 00
Edmond Larochelle.. . . .	300 00
Joseph Larochelle.. . . .	300 00
Joseph Lapointe.. . . .	300 00
Ls. Edmond Morin.. . . .	300 00
Charles Normand.. . . .	300 00
Pierre Pepin Lachance, died March 23, 1916.. . . .	118 33
Isiode Noel, pension from July 3, 1916.. . . .	97 27
Joseph Plante.. . . .	300 00
Adelme Pouliot.. . . .	300 00
Alphonse Pouliot.. . . .	300 00
Hubert Raymond.. . . .	300 00
Napoleon Rioux.. . . .	300 00
Ls. Albert Royer, died January 15, 1916.. . . .	61 94
A. Tremble Simard.. . . .	300 00
Victor Vezina.. . . .	300 00
	<hr/>
	\$8,473 18

One Pilot at \$270—

Alphonse Asselin.. . . .	\$270 00
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Seven Pilots at \$216—

Cyrille Audet.. . . .	\$ 216 00
Chs. Fr. Brown, died April 21, 1916.. . . .	102 60
Joseph S. Brown.. . . .	216 00
Nazaire Delisle.. . . .	216 00
Laurent Godbout.. . . .	216 00
Moise Lachance, died June 23, 1916.. . . .	139 40
George Normand.. . . .	216 00

\$1,322 00

Twenty-eight Widows at \$116—

Widow J. Evariste Adam.. . . .	\$116 00
" J. Bte. Bernier.. . . .	116 00
" Chs. Frs. Brown, pension from April 21, 1916.. . . .	60 58
" Ephrem Chamberland.. . . .	116 00
" J. Bte. Couillard.. . . .	116 00
" Achille Damours.. . . .	116 00
" David Damours.. . . .	116 00
" Jereme Dufresne.. . . .	116 00
" Joseph Fortier.. . . .	116 00
" Antoine Gobeil.. . . .	116 00
" Pierre Gobeil.. . . .	116 00
" Moise Godbout, married May 9, 1916.. . . .	60 52
" Hermenegilde Guenard.. . . .	116 00
" Moise Lachance, pension from June 24, 1916.. . . .	40 65
" Pierre Pepin Lachance, pension from March 24, 1916.. . . .	70 24
" F. X. Lamarre.. . . .	116 00
" Antoine Lapointe.. . . .	116 00
" Paul Langlois.. . . .	116 00
" Edmond Larochelle, pension from September 10, 1916.. . . .	132 06
" Onesime Larochelle.. . . .	116 00
" J. E. Bona Lavoie.. . . .	116 00
" Regis Menard.. . . .	116 00
" Joseph Paquet.. . . .	116 00
" J. Bte. Pouliot.. . . .	116 00
" Joseph Pouliot, died October 24, 1916.. . . .	113 78
" Moise Pouliot.. . . .	116 00
" Charles A. Raymond.. . . .	116 00
" Ls. Albert Royer, pension from January 16, 1916.. . . .	92 04

\$3,005 87

8 GEORGE V, A. 1918

PILOTAGE DISTRICT OF QUEBEC—Continued

Seven Widows at \$112—

Widow Ant. Th. Chouinard	\$112 00
" Nazaire Curodeau.. . . .	112 00
" Jean Delisle.. . . .	112 00
" Theophile Gourdeau.. . . .	112 00
" Emile Lachance.. . . .	112 00
" Joseph Lachance.. . . .	112 00
" J. Bte. Patoine.. . . .	112 00
	<hr/>
	\$784 00

Five Widows at \$110—

Widow Eustache Doiron.. . . .	\$110 00
" Georges Despres.. . . .	110 00
" Nicolas Fortin.. . . .	110 00
" Paul Paquet.. . . .	110 00
" Adelard Santerre.. . . .	110 00
	<hr/>
	\$550 00

Three Widows at \$106—

Widow Leon Labrecque.. . . .	\$106 00
" Philéas Langlois.. . . .	106 00
" Napoléon Pouliot.. . . .	106 00
	<hr/>
	\$318 00

Four Widows at \$100—

Widow Alfred Dion.. . . .	\$100 00
" Joseph Dion.. . . .	100 00
" Dennis Glynn, died April 7, 1916.. . . .	43 54
" Pierre Ross, died February 29, 1916.. . . .	32 92
	<hr/>
	\$276 46

Four Widows at \$96—

Widow Ovide Lachance, died March 17, 1916.. . . .	\$ 36 27
" Joseph Levesque.. . . .	96 00
" D. Ferdinand Pelletier.. . . .	96 00
" Benjamin Pinault.. . . .	96 00
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	\$324 27

One Widow at \$70—

Widow Cyrille Lapointe.. . . .	\$70 00
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One Widow at \$68—

Widow Napoleon Dallaire.. . . .	\$68 00
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One Widow at \$64—

Widow Alfred Turgeon.. . . .	\$64 00
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Damase Babin.. . . .	\$ 30 00
Jean Dugas.. . . .	30 00
Pierre Descombes.. . . .	30 00
Isaac Forbes, died November 18, 1916.. . . .	31 53
Jean Gobell.. . . .	30 00
Joseph Langlois.. . . .	30 00
François Noël.. . . .	30 00
Joseph Plante.. . . .	30 00
J. Bte. Talbot.. . . .	30 00
	<hr/>
	\$271 53

SESSIONAL PAPER No. 21

PILOTAGE DISTRICT OF QUEBEC.—Continued.

QUEBEC PILOTS DRAWING A GOVERNMENT PENSION OF \$300 PER ANNUM.

Ls. R. Demers.....	\$ 300 00
Theodule Lachance.....	300 00
Charles Brown, died 21st April, 1916.....	75 00
Jos. Lapointe.....	300 00
Nestor Lachance.....	300 00
Paul Gobeil.....	300 00
Barthelemi Lachance.....	300 00
Alphonse Asselin.....	300 00
Chas. Normand.....	300 00
Napoleon Rioux.....	300 00
Elzear Desrosiers.....	300 00
Hubert Raymond.....	300 00
Arbel Bernier.....	300 00
Laurent Godbout.....	300 00
Adelme Pouliot.....	300 00
Edmond Larochelle.....	300 00
L. E. Morin.....	300 00
A. T. Simard.....	300 00
Jos. Plante.....	300 00
Victor Vezina.....	300 00
J. G. Dupil.....	300 00
Raymond Baquet.....	300 00
Alfred Larochelle.....	300 00
Elzear Godbout.....	300 00
Theophile Corriveau.....	300 00
Alphonse Pouliot.....	300 00
Emilio Couillard.....	300 00
Treffle Delisle.....	300 00
Pierre Pepin, died 23rd March, 1916.....	75 00
David Dumas, pension from 1st April, 1916.....	225 00
Alfred Gaudreau, pension from 1st April, 1916.....	225 00

TABLE I.—RATE OF PILOTAGE FOR THE HARBOUR OF QUEBEC AND BELOW FOR EACH FOOT OF DRAUGHT WATER.

From	To	From May 1, to Nov. 10	From Nov. 10, to Nov. 10.	From Nov. 19, to Mar. 1.	From Mar. 1, to May 1.
Father Point . . .	Quebec.	\$3.87 per ft.	\$4 95 per ft.	\$6 02 per ft.	\$4 41 per ft.
Quebec.	Father Point.....	3 40 "	4 46 "	5 54 "	3 93 "
Father Point....	Chicoutimi	3 87 "	4 95 "	6 02 "	4 41 "
Chicoutimi.....	Father Point.....	3 40 "	4 46 "	5 54 "	3 93 "
Quebec.	Tadoussac .	3 40 "	4 46 "	5 54 "	3 93 "
Tadoussac.....	Quebec.....	3 87 "	4 95 "	6 02 "	4 41 "
Tadoussac.....	Chicoutimi.....	$\frac{2}{3}$ of 3.87 (2 58)	$\frac{2}{3}$ of 4 95 (3 30)	$\frac{2}{3}$ of 6 02 (4 02)	$\frac{2}{3}$ of 4 41 (2 94)
Chicoutimi.....	Tadoussac.	$\frac{2}{3}$ of 3 40 (2 27)	$\frac{2}{3}$ of 4 46 (2 98)	$\frac{2}{3}$ of 5 54 (3 70)	$\frac{2}{3}$ of 3 93 (2 66)
Father Point or any place below the an- chorage of Brandy Pots off Hare island.	Anchorage or moor- ing ground in the Basin of harbour of Quebec.	3 87 per ft.	4 95 per ft.	6 02 per ft.	4 41 per ft.
The anchorage ground at the Brandy Pots off Hare island or any place above the said anchorage ground and below St. Roch's point.	" "	$\frac{2}{3}$ of 3 87 (2 58)	$\frac{2}{3}$ of 4 95 (3 30)	$\frac{2}{3}$ of 6 02 (4 02)	$\frac{2}{3}$ of 4 41 (2 94)

8 GEORGE V, A. 1918

PILOTAGE DISTRICT OF QUEBEC—*Concluded.*

TABLE I.—RATES OF PILOTAGE FOR THE HARBOUR OF QUEBEC AND BELOW FOR EACH FOOT OF DRAUGHT WATER.

From	To	From May 1, to Nov. 10.	From Nov. 10, to Nov. 10.	From Nov. 19, to Mar. 1.	From Mar. 1, to May 1.
St. Roch's Pt. or any place above this point and below the Pointe-aux-Pins or Crane island	Anchorage or mooring ground in the basin or harbour of Quebec.	of 3.87 (1.29)	of 4.95 (1.65)	of 6.02 (2.01)	of 4.41 (1.47)
Pointe-aux-Pins or Crane island or any place below St. Patrick's hole.	" " "	of 3.87 (0.97)	of 4.95 (1.24)	of 6.02 (1.50)	of 4.41 (1.10)
The anchorage or mooring ground in the basin or harbour of Quebec	Father Point or the place where the pilot shall be discharged in the river below Quebec.	2.42	4.46	5.54	3.93

TABLE II.—RATES OF PILOTAGE FOR THE HARBOUR OF QUEBEC AND BELOW.

From	To
Any wharf in the harbour of Quebec between pointe à Carey, below, and the west end of the Allan's wharf above, both inclusive.	Any other wharf within the said limits..... \$2.50
Any place in the harbour of Quebec not being a wharf within the said limits.	Any other place in the said harbour not being a wharf within the said limits..... 5.00

N.B.—Pilots engaged to pilot vessels from St. Patrick's hole or any other point below the Father Point shall be paid from 10 to 25 cents more than the rates allowed in Table II for piloting vessels from one part of the harbour to another.

The payment of pilotage dues is compulsory in the Pilotage District of Quebec, P.Q.

P. L. LACHANCE,
Acting Superintendent of Pilots.

SESSIONAL PAPER No. 21

PILOTAGE DISTRICT OF VANCOUVER, B.C.

Pilot Commissioners.	Date of Appointment.
C. G. Major.....	April 15, 1879
Frank Burnett.....	June 20, 1898
Capt. F. W. Evans.....	Feb. 12, 1912
H. G. Ross..	Feb. 12, 1912
Capt. Harvey Copp.....	Feb. 26, 1915
C. Gardner Johnson (Apptd. Secy-Treas.)	June 20, 1898

Pilots.	Date of Appointment.	Age.	Earnings.	Amount paid to each.
			\$ cts.	\$ cts.
1 W. Ettershank.....	June 18, 1898	74	47,812 88	4,384 36
2 H. Robson Jones.....	July 1, 1892	61		2,430 26
3 G. W. Robarts.....	Oct. 1, 1907	44		4,384 36
4 R. A. Batchelor.....	May 15, 1910	45		4,384 34
5 A. C. Anderson.....	Oct. 16, 1911	48		4,384 32
6 A. Christensen.....	Feb. 1, 1912	42		3,675 85
7 B. L. Johnson.....	Jan. 29, 1913	38		3,376 60
8 T. S. Guns.....	Feb. 12, 1916	48		2,896 86
9 C. W. Wearmouth.....	Oct. 16, 1916	36		800 08
			\$47,812 88	\$30,717 03

Pilot Boats.	Cost of Maintenance.
Pilot No. 1 (Gas).....	
C.G.J. (Gas).....	
(Men's wages, repairs and general running expenses).....	\$5,339 22

Vessels which paid pilotage dues.	Number.	Tonnage.	Amount paid.
			\$ cts.
British steam vessels.....	242	1,010,560	18,938 41
British sailing vessels.....	23	46,944	1,221 44
Foreign steam vessels.....	689	1,116,607	27,092 32
Foreign sailing vessels.....	26	20,370	560 71
	980	2,194,481	47,812 88

RESERVE FUND.

Bank of Montreal Savings Dept.	\$ 398 58
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PILOTAGE DISTRICT OF VANCOUVER, B. C.—*Concluded.*

RECEIPTS AND EXPENDITURE.

	Receipts.	Expendi- ture.
	\$ cts.	\$ cts.
Balance in bank, Jan. 1st, 1916	2,386 31	
Pilotage earnings, 1916	47,812 88	
Paid pilots, Jan. 5th, 1916.....		2 386 31
Paid pilots year, 1916.....		30,717 03
Secretary's salary.....		900 00
Rent of offices.....		360 00
Telegrams, sundries, etc.....		290 90
Special allowance for travelling expenses to Secretary on pilotage work.....		100 00
Pilot Boat and Station expenses account, 1916		5,339 22
Pilots' expenses, 1916.....		6,975 36
Balance in bank.....		3,130 37
	50,199 19	50,199 19

Pilotage Rates.

For vessels entering into a clearing from the ports of Vancouver, Howe Sound and Powell River the rates of pilotage shall be as follows:—

(a) For vessels under sail \$2.00 per foot draught of water and one cent per net registered ton.

(b) For vessels in tow of a steamer, \$1.00 per foot draught of water and one cent per net registered ton.

(c) For steamers, \$1.00 per foot draught of water, and one cent per net registered ton, and \$1.00 (one dollar) per foot draught from the Vancouver Pilotage limits to the Powell River Pilotage limits (provided that vessels calling at English Bay, bound for Howe Sound or Powell River shall not be liable for inward pilotage for port of Vancouver.

Any portion of a foot not exceeding six inches shall be paid for as half a foot; any fraction exceeding six inches shall be paid for as one foot.

The Pilotage from cape Flattery or Royal roads to a line drawn from point Atkinson to the nun buoy on Spanish bank, or the limits of Howe sound as hereinbefore described, and vice versa, is not compulsory, but if the services of a pilot are required he shall be paid the following rates, viz:—

	Per Foot
From Cape Flattery... ..	\$6 00
Callum bay... ..	5 00
" Beachy head... ..	4 00
" Race rocks or Royal roads... ..	3 00

And for vessels under steam or in tow of a steamer the following rates shall be paid:—

	Per Foot.
From Cape Flattery... ..	\$3 00
" Callum bay... ..	2 50
" Beachy head... ..	2 00
" Race rocks or Royal roads vessels under steam... ..	1 00
" Race rocks or Royal roads vessels in tow of a steamer... ..	1 50

The payment of pilotage dues is compulsory in the Pilotage District of Vancouver, B. C.

C. GARDNER JOHNSON,

Secretary.

SESSIONAL PAPER No. 21

PILOTAGE DISTRICT OF VICTORIA AND ESQUIMALT, B.C.

Pilot Commissioners.	Date of Appointment.
Geo. A. Kirk.....	Nov. 29, 1912
H. G. Wilson.....	Nov. 29, 1912
W. J. Stephens.....	Nov. 29, 1912
J. R. Saunders.....	Oct. 8, 1913
Geo. A. Okell.....	Oct. 8, 1913
J. Kingham (Apptd. Secty-Treas.).....	Aug. 27, 1909

Pilots.	Date of Appointment.	Age.	Earnings.	Amount paid to Pilots.
			\$ cts.	\$ cts.
John Newby.....	1891	68	{	{
William Cox.....	1903	61	{	{
Charles Israel Harris	1910	49	{ 17,838 72 }	{ 10,133 75 }
William H. Whiteley	1911	54	{	{
			{ 17,838 72 }	{ 10,133 75 }

Vessels which paid pilotage dues.	Number.	Tonnage.	Amount paid.
			\$ cts.
British steam vessels.....	162	753,327	6,388 84
British sailing vessels.....	5	8,123	338 27
Foreign steam vessels.....	329	862,624	10,750 12
Foreign sailing vessels.....	12	10,185	361 49
	508	1,634,259	17,838 72

Pilot Boats.	Cost of Maintenance.
Colby No. 1 (as per pilots' monthly log for upkeep of pilots' plant) . .	\$ cts.
Colby No. 2.....	4,155 16

8 GEORGE V, A. 1918

PILOTAGE DISTRICT OF VICTORIA AND ESQUIMALT, B.C.—Continued.

RECEIPTS AND EXPENDITURE.

	Receipts.	Expenditure.
	\$ cts.	\$ cts.
Pilots' fees.	17,838 72	
Salaries, 1915	918 52	
Interest	500 00	
Pilots' drawings, 1916.....		10,133 75
Wages, 1916		1,962 20
Pilots' drawings, salaries, 1915		918 52
Upkeep pilots' boats, etc.....		4,155 16
Salaries, 1915		600 00
Rent		420 00
Printing		33 25
Lighting		8 80
Miscellaneous expenses		71 41
Interest on loan, United Oil Refining Co.		8 25
Balance		945 90
	19,257 24	19,257 24

Pilotage Rates.

(a) Vessels bound to other ports and coming to an anchor in Royal roads, the pilotage shall be free, except the services of a pilot are employed, when pilotage according to the following graduated scale shall be payable:

From inside or north of Race rocks to Royal bay or vice versa, 50 per cent of the prescribed rates under Clause (b).

From Beachy head to Royal roads or vice versa, \$1 per foot.

" Pillar point to Royal roads or vice versa, \$3 per foot.

" Cape Flattery to Royal roads or vice versa, \$6 per foot.

(b) For vessels entering into or clearing from the ports of Victoria and Esquimalt, the rates of pilotage shall be as follows:

(1) For regular ocean steamers, 50 cents per foot draught of water and $\frac{1}{2}$ cent per net registered ton up to a maximum of 3,500 tons on the inward voyage subject to a discount of 20 per cent, and 50 per cent of the above rates on the outward voyage.

(a) Regular ocean steamers are those which have in their printed schedule Victoria or Esquimalt as a regular port of call, and call both inwards and outwards.

(b) Any regular vessel calling inwards and not outwards, or vice versa, will not be entitled to the 20 per cent discount.

(2) For irregular ocean steamers, \$1 per foot draught of water and $\frac{1}{2}$ cent per net registered ton.

(3) For regular steamers in the coasting trade between San Francisco and Lynn canal inclusive, the rate shall be the same as for regular ocean steamers, as rated in Clause 1.

(4) For vessels under sail, \$2 per foot draught of water and 1 cent per net registered ton.

(5) For sailing vessels in tow, \$1.50 per foot draught of water and 1 cent per net registered ton.

(6) For all vessels entering into or clearing from William's Head quarantine station, the rates shall be 50 per cent of the prescribed rates of any class of vessel for Victoria and Esquimalt, subject to exemptions in Section 17, Clause 7; provided, however, that all coasters between San Francisco and Lynn canal inclusive when compelled by special instructions from the Dominion government to call at William's Head quarantine station, shall be exempt from pilotage dues unless the services of a pilot are requested.

(7) For all vessels of 500 tons and under, 75 cents per foot draught of water.

SESSIONAL PAPER No. 21

PILOTAGE DISTRICT OF VICTORIA AND ESQUIMALT, B.C.—*Concluded.*

(c) *Gulf Pilotage.*—For all vessels from the limits of the ports of Victoria and Esquimalt to the limits of all ports on Puget sound and gulf of Georgia and vice versa, the rate of pilotage shall be \$1.00 per foot draught of water.

(d) Vessels proceeding from Victoria to Esquimalt, and vice versa, and having discharged or received a portion of their cargo in either harbour, and having paid full pilotage in either harbour, if proceeding with the assistance of steam shall pay \$1.00 per foot.

(e) Any fraction of a foot not exceeding six inches shall be paid for as half a foot, and any fraction of a foot exceeding six inches shall be paid for as a foot.

(f) Pilots shall, when called upon to do so, remove vessels from one part of either harbour to another part of the same harbour, for the specific charge of \$10.00 for each and every removal.

(g) The Pilotage Authority, subject to the approval of the Governor in Council, shall have power under this By-law, to make such arrangements from time to time concerning the pilotage of vessels making regular trips between Victoria and Puget sound, as to them may appear necessary or expedient in the interests of trade and commerce.

(h) Compulsory payment of pilotage dues is not chargeable against vessels while in Royal roads, unless such vessels shall enter either or both the harbours of Victoria and Esquimalt.

(i) When a vessel is bound to or from any other port in the province, either laden or in ballast, and does not discharge or receive any cargo, passengers or mails, but simply enters it as a harbour of refuge, such vessel shall be exempt from pilotage into and out of Esquimalt, excepting in cases where a pilot is actually engaged by the master for such services.

(j) Steamers making regular trips to Victoria and Esquimalt and having paid the prescribed rates under clause (b) on the inward voyage and returning again to either of said harbours within a period of twenty days, shall only pay one-half the inward rates.

The payment of pilotage dues is compulsory in the Pilotage District of Victoria and Esquimalt, B.C.

JOSHUA KINGHAM,

Secretary.

8 GEORGE V, A. 1918

PILOTAGE DISTRICT OF NANAIMO.

Pilot Commissioners.				Date of Appointment.
Jas. S. Knarston.....				April, 17, 1910
Tully Boyce.....				April 17, 1900
Ira E. Lowe.....				Mar. 21, 1912
Wm. Bennett.....				May 29, 1912
Jas Pender.....				April 7, 1915
E. G. Cavalsky (apptd. Secty-Treas.)				May 31, 1915

Pilots.	Date of Appointment.	Age	Earnings	Amount paid to each.
			\$ cts.	\$ cts.
1 J. Christensen.	Feb., 1891.....	75	2,877 87	2,512 24
2 J. E. Butler.....	Mar., 1894.....	55	2,943 90	2,512 24
3 W. D. Owen.....	Oct., 1898....	50	2,668 68	2,512 24
4 A. F. Yates.....	Sept., 1900.	64	3,139 77	2,512 24
5 J. Gosse.....	Aug., 1903.....	52	3,311 66	2,512 24
6 J. C. Foote.....	April, 1907.	56	3,223 42	2,512 24
7 J. W. Butler.....	Oct., 1907...	46	3,422 84	2,512 24
			21,588 44	17,585 68

Vessels which paid pilotage dues	Number.	Tonnage.	Amount paid
			\$ cts.
British steam vessels	75	244,637	9,750 47
Foreign steam vessels..	156	211,440	11,973 00
Barges	24	46,590	860 60
Small tug and scows		116,950	3,378 75
		619,627	25,962 82

Pilot boats.	Cost of Maintenance.
	\$ cts.
1 in Victoria...	1 005 42

SESSIONAL PAPER No. 21

PILOTAGE DISTRICT OF NANAIMO, B.C.—*Concluded.*

RECEIPTS AND EXPENDITURE.

	Receipts.	Expendi- ture.
	\$ cts.	\$ cts.
Pilotage dues.. ..	25,962 82	
<i>Victoria Station—</i>		
Telephone and telegrams.....		266 22
Wages.. ..		565 00
Expenses to boat.....		540 42
Insurance... ..		110 00
Miscellaneous.		28 85
<i>Nanaimo Station—</i>		
Telephones and telegrams.....		116 55
Boat hire.. ..		359 50
Patriotic Fund.. ..		420 00
Miscellaneous.		44 00
<i>Nanaimo Office—</i>		
Rent		264 00
Salaries		475 00
Janitor.		90 00
Telephone.		42 00
Auditing.. ..		20 00
Light and heat.		25 37
Travelling expenses.. ..		42 00
Stationery and stamps.. ..		23 30
Investigation.. ..		35 00
Miscellaneous... ..		16 06
Commission on collections.		413 85
Pilots' travelling expenses... ..		4,480 00
Cash paid to pilots.....		17,585 68
Cash balance on hand.....		0 02
	25,962 82	25,962 82

Pilotage Rates.

The rates for all vessels entering into or clearing from any port within the Pilotage District of Nanaimo both outward and inward, shall be as follows:—

(a) For vessels under sail, \$2 per foot draught of water and one cent per net registered ton.

(b) For vessels in tow of a steamer, \$1 per foot draught of water, and one cent per net registered ton.

(c) For steamers, \$1 per foot draught of water, and one cent per net registered ton.

Any portion of a foot not exceeding six inches shall be paid for as half a foot, and any fraction exceeding six inches shall be paid for as one foot.

Gulf of Georgia and Straits Navigation.

Vessels accepting the services of a duly licensed pilot in the straits of Juan de Fuca, Hare straits or gulf of Georgia, and bound to any ports or harbours within the jurisdiction of the Pilotage Authority of Nanaimo, shall pay for such service both inward and outward the sum of \$10 per day or fraction of a day of 24 hours, in addition to the regular port pilotage.

Any vessel arriving at any port within the Pilotage District of Nanaimo, without having been spoken inwards by a pilot shall not be exempt from paying outward pilotage, and masters of vessels requiring a pilot outwards, must make application to the Pilotage Authority or their agents who shall supply him with the first available pilot who may be disengaged.

The payment of pilotage dues is compulsory in the Pilotage District of Nanaimo, B.C.

E. G. CAVALSKY,
Secretary.

8 GEORGE V, A. 1918

PILOTAGE DISTRICT OF NEW WESTMINSTER, B.C.

Pilot Commissioners.			Date of Appointment.
Geo. S. Blakeley.....			Jan. 9, 1914.
Alfred E. White.....			Jan. 9, 1914.
Fredk. J. Coulthard ..			Jan. 9, 1914.
Pilot.	Date of Appointment.	Age.	Amount paid per month.
Capt. L. H. Ford.	Oct. 15, 1913..	59	\$ 125 00
Vessels which paid pilotage dues.	Number.	Tonnage.	Amount paid
			\$ cts.
British steam vessels.....	1	2,577	103 54
Foreign steam vessels.....	206	7,555	1,060 44
Foreign sailing vessels.....	1	747	43 94
	208	10,879	1,207 92

RECEIPTS AND EXPENDITURE.

	Receipts.	Expendi- ture.
	\$ cts.	\$ cts.
Amount belonging to 1915 business but not received until Jan. 3rd, 1916.....	55 00	
Receipts for year, 1916.....	1,207 92	
City of New Westminster.....		1,049 78
Commission on outside collections at ports of Steveston, White Rock and Ladner at 10%.....		96 49
Pilots' expenses.....		17 50
Secretary's salary.....		60 00
Balance.....		39 15
	1,262 92	1,262 92

NOTE.—The receipts of the district not being sufficient to support a pilot, the city of New Westminster pays the pilot's salary of \$125.00 per month. 90% of all receipts is paid to the City of New Westminster and 10% retained for pilot's and office expenses.

SESSIONAL PAPER No. 21

PILOTAGE DISTRICT OF NEW WESTMINSTER, B.C.—*Concluded.*

Pilotage Rates.

For vessels entering into or clearing from the port of New Westminster the rate of pilotage shall be as follows:—

From the lightship on the Fraser sand-heads to New Westminster—

(a) For vessels under sail \$2 per foot draught of water and one cent per net registered ton.

(b) For vessels in tow of a steamer \$1 per foot draught and one cent per net registered ton.

(c) For steamers \$1 per foot draught of water and one cent per net registered ton.

Any fraction of a foot not exceeding six inches shall be paid for as half a foot, and any fraction of a foot exceeding six inches shall be paid for as a foot.

The payment of pilotage dues is compulsory in the Pilotage District of New Westminster, B.C.

D. H. MACGORRAN,
Secretary.

PILOTAGE DISTRICT OF HALIFAX, N.S.

Pilot Commissioners.	Date of Appointment.
M. C. Grant.....	June 20, 1892
Frank Rudolph.....	Oct. 1, 1909
James Hall.....	July, 27, 1904
Capt. Neil Hall.....	Nov. 24, 1908
Jas. E. DeWolfe.....	May 16, 1907
Peter F. Martin.....	Nov. 4, 1915
Walter Mitchell.....	May 4, 1916
J. W. Crichton (apptd. Secy-Treas.) ..	Mar. 14, 1914

Pilots.	Date of Appointment.	Age.	Amount paid to pilots.
Boat No. 1 <i>America</i> —			\$ cts.
1 Frank Thomas.....	1898	39	25,846 46
2 William Hayes.....	1898	41	
3 Wallace Brackett.....	1911	30	
4 John Holland.....	1905	34	
5 William Gorman.....	1898	43	
6 Charles F. Martin.....	1890	49	
7 Thomas Reyno.....	1884	55	
8 Henry Latter.....	1890	47	
9 William Latter.....	1915	27	
10 Cyril Hanrahan.....	1915	28	
Boat No. 2, <i>Columba</i> —			25,451 23
11 James G. Renner.....	1911	31	
12 Lamont Power.....	1911	28	
13 Lawrence Hayes.....	1905	37	
14 Edward Renner.....	1911	29	
15 Thomas Hayes.....	1884	56	
16 Frank Mackey.....	1889	42	
17 Walter White.....	1915	26	
18 John Brown.....	1915	24	
			51,297 69

8 GEORGE V, A. 1918

PILOTAGE DISTRICT OF HALIFAX, N.S.—Continued.

Apprentice Pilots.	Date of Appointment.	Age.	Amount paid to each.
			\$ cts.
James Dempsey.	1915	24	102 00
John Brackett.	1915	25	102 00
Frank Reno.....	1915	27	102 00
E. L. DeLouretrey.....	1915	27	102 00
			408 00
Vessels which paid pilotage dues.	Number.	Tonnage	Amount paid.
			\$ cts.
British steam vessels	1,064	2,372,356	43,045 00
British sailing vessels.....	565	117,060	3,829 30
Foreign steam vessels..	101	123,403	3,566 90
Foreign sailing vessels	186	69,151	3,916 00
	1,916	2,681,970	54,357 80
Dues outstanding			560 40
			54,918 20
PENSION FUND.			\$ cts.
Jan. 1st, 1916, balance			40,828 68
Dec. 31st, 1916, dividends received to date.			2,494 49
Dec. 31st, 1916, commissions to date.			1,866 81
			\$ 45,189 98
Dec. 31st, 1916, pensions paid....			2,963 48
			42,226 50

LIST OF PENSIONS AND PENSIONS PAID FOR CALENDAR YEAR, 1916

James H. ...	Received..	\$ 499 92	per annum
W. ...	"	83 33	"
J. ...	"	260 00	"
Mrs. C. Martin, died Nov. 27th, 1916..	"	116 25	"
Mrs. E. Bayers.	"	150 00	"
Mrs. D. Martin.	"	75 00	"
...	"	50 00	"
Mrs. H. Munro	"	75 00	"
Mrs. J. Holland..	"	75 00	"
Mrs. B. Brackett..	"	100 00	"
Mrs. W. White..	"	249 96	"
John Hayes....	"	600 00	"
James Spears.	"	529 10	"
		\$ 2,963 48	

SESSIONAL PAPER No. 21

PILOTAGE DISTRICT OF HALIFAX, N S — *Concluded*

RECEIPTS AND EXPENDITURE.

	Receipts.	Expendi- ture.
	\$ cts.	\$ cts.
Jan. 1st, 1916, balance....	763 41	
Pilotage fees..	53,765 90	
Outward pilotage.	1,152 30	
Commission on \$9,175.00 (Transports on harbour)..	275 24	
Paid pilots		51,297 69
Superannuation.....		1,866 81
Expenses.....		620 98
Apprentices....		408 00
Secretary.....		999 96
Balance		763 41
	55,956 85	55,956 85

PILOTAGE RATES.

	Inward.	Outward.
	\$ cts.	\$ cts.
Canadian vessels of 120 tons and under.	Free.	Free.
Vessels under 200 tons...	9 60	6 00
Vessels of 200 tons to 300 tons.....	13 20	8 40
“ 300 “ 400 “	16 80	10 80
“ 400 “ 500 “	19 20	12 00
“ 500 “ 600 “	21 60	13 20

Vessels of 600 tons and over, sixty cents for every 100 tons additional of fractional part thereof inward and thirty cents outward.

Outward pilotage for all vessels of 200 tons and upwards compulsory.

The payment of pilotage dues is compulsory in the Pilotage District of Halifax, N.S.

J. W. CRICHTON,
Secretary.

8 GEORGE V, A. 1918

PILOTAGE DISTRICT OF SYDNEY, N.S.

Pilot Commissioners.	Date of Appointment.
Capt. Thos. Desmond..	May 13, 1912
R. T. J. Vooght.....	May 13, 1912
C. P. Livingstone.....	Jan. 20, 1914
Capt. P. H. Worgan..	Oct. 28, 1915
F. C. Kimber.....	May 13, 1912
(Apptd. Secty-Treas.)	Sept. 16, 1912

Pilots.	Amount paid to each.
	\$ cts.
1 Y. H. Barrington.....	1,482 26
2 Joseph Brown.....	1,457 58
3 Thomas Burke.....	1,354 72
4 John Cann.....	1,354 72
5 Everett Cann.....	1,482 26
6 James H. Carroll.....	1,261 82
7 John Carroll.....	1,268 99
8 Lewis Carroll.....	1,354 72
9 John Connell.....	1,354 72
10 Michael Curran.....	1,122 09
11 George Fraser.....	1,354 72
12 William Langille.....	1,354 72
13 Frank McGillvary.....	1,482 26
14 James McGillvary.....	1,354 72
15 Vincent McGillvary.....	1,482 26
16 Dan. A. McInnis.....	1,482 26
17 John McNeil.....	1,354 72
18 Thomas McNeil.....	1,354 72
19 John Mahon.....	1,354 72
20 W. D. Morrison.....	1,351 72
21 Bernard Mullins.....	1,482 26
22 John T. Mullins.....	1,482 26
23 William Perry.....	1,482 26
24 E. F. Petrie.....	1,042 80
25 Henry Petrie.....	1,482 26
26 Herbert Ratchford.....	1,482 26
27 Thomas Ratchford.....	1,314 72
28 Arthur R. Richardson...	1,482 26
29 Peter Rigby.....	1,482 26
30 Thomas Roberts.....	1,351 72
31 Thomas Rudderham...	1,354 72
32 George Spencer.....	1,482 26
33 James P. Young.....	1,354 72
	45,703 46

Apprentice Pilots.	Amount paid to each.
	\$ cts.
1 Wm. D. McGillvary	677 32
2 Emmett McGrath.	677 32
3 Hilliard Forward..	677 32
4 D. J. McInnis.....	624 80
5 Bert Ling.....	741 10
6 J. H. Laffin.....	677 32
	4,075 18

SESSIONAL PAPER No. 21

PILOTAGE DISTRICT OF SYDNEY, N.S.—Continued.

White Flag ships licensed for the year.		Amount paid.
		\$ cts.
SS. Coban..		100 00
Corunna...		100 00
Cape Breton...		100 00
Louisburg..		100 00
Nevada...		100 00
Algonquin ...		100 00
		600 00

Vessels which paid pilotage dues.	Number.	Tonnage.	Amount paid.
			\$ cts.
British steam vessels.	785	1,904,827	47,564 00
British sailing vessels.....	7	1,557	69 00
Foreign steam vessels..	227	391,723	10,654 00
Foreign sailing vessels	25	12,131	437 50
	1,044	2,310,238	58,724 50

PENSION FUND.

	Amount paid.
	\$ cts.
Ex-Pilots Connell, Ratchford, Burke and Ling, \$50.00 each.....	200 00
Widows Fraser, M. Petrie, D. Petrie, J. Petrie, McInnis, McGillvary, Mullins, Ratchford, Townsend, J. Brown and M. A. Brown, \$30.00 each.....	330 00
	530 00

PILOTAGE DISTRICT OF SYDNEY, N.S.W.
RECEIPTS AND EXPENDITURE.

	Receipts.	Expendi- ture.
	\$ cts.	\$ cts.
Balance from 1915	392 10	
Pilotage receipts	58,724 50	
Wharfage receipts	600 00	
		45,703 46
		4,075 18
		3,344 00
		1,300 00
		530 00
		775 00
		100 00
		875 00
		250 00
		100 00
		500 00
		233 05
		1,228 06
		702 57
	59,716 60	59,716 60

PENSION FUND DEC. 31st, 1916.

Government War Loan.....	\$ 2,000 00
Cash in Savings Bank.....	465 68

PILOTAGE RATES.

	To Sydney.	To North Sydney.
	\$ cts.	\$ cts.
For vessels under 100 tons..	6 00	5 00
From 100 tons to 150 tons..	7 00	6 00
" 150 " 200 "	8 00	7 00
" 200 " 250 "	9 00	8 00
" 250 " 300 "	10 00	9 00
" 300 " 350 "	11 00	10 00
" 350 " 400 "	12 00	11 00
and for every additional 50 tons or fractional part thereof \$1; for vessels 800 tons and upwards \$1 for every additional 100 tons or fractional part thereof. Outward pilotage shall be the same as inward.		

The payment of pilotage dues is compulsory in the Pilotage District of Sydney, N.S.

F. C. KIMBER,
Secretary.

SESSIONAL PAPER No. 21

PILOTAGE DISTRICT OF LOUISBURG, N.S.

Pilot Commissioners.	Date of Appointment.
Thos. Townsend.....	Sept. 10, 1898
John Dickson.....	Sept. 26, 1908
Lauchlin McQueen.....	Oct. 8, 1915
James T. Kelly.....	Oct. 8, 1915
E. G. Whitman.....	Oct. 8, 1915
(Apptd. Secty-Treas.).....	Dec. 16, 1915

Pilots.	Date of Appointment.	Age.	Earnings.	Amount paid to each.
			\$ cts.	\$ cts.
1 Pearce Pope.....	May 7, 1916..	42	1,780 81	1,607 61
2 Tom Wilcox.....	May 7, 1915...	54	1,780 81	1,607 61
3 John Power.....	May 7, 1916...	54	1,780 81	1,607 61
4 John Tutty.....	May 7, 1916...	56	1,780 81	1,607 61
5 P. Mahon.....	May 7, 1916...	56	1,780 81	1,607 61
6 W. Williams.....	May 7, 1916...	46	1,780 81	1,607 61
7 Lewis Tutty.....	May 1, 1915...	45	1,780 81	1,607 61
8 John Kelly.....	Mar. 1, 1915	52	1,780 81	1,607 61
			14,246 48	12,860 88

Vessels which paid pilotage dues.	Number.	Tonnage.	Amount paid.
			\$ cts.
British steam vessels.....	203	432,929	8,304 07
British sailing vessels....	75	78,168	1,859 00
Foreign steam vessels.....	124	186,875	4,083 47
	402	697,972	14,246 54

RECEIPTS AND EXPENDITURE.

	Receipts.	Expenditure.
	\$ cts.	\$ cts.
Pilotage dues.....	14,246 54	
Secretary's salary, (4% of gross earnings).....		569 84
Coal.....		20 40
Telephone.....		20 45
Travelling expenses.....		67 10
New boat and expense of repairs to other boats.....		707 83
Divided between 8 pilots.....		12,860 92
	14,246 54	14,246 54

PILOTAGE DISTRICT OF LOUISBURG, N.S. *Continued*

PILOTAGE RATES.

						Inward	Outward.
						\$ cts.	\$ cts.
Overland steamships	81 tons	to	120 tons	....	..	4 00	3 00
"	120	"	200	"	....	6 00	4 00
"	200	"	300	"	....	7 00	5 00
"	300	"	400	"	....	8 00	6 00
"	400	"	500	"	....	10 00	8 00
"	500	"	700	"	....	11 00	9 00
"	700	"	1,000	"	....	13 00	11 00
"	1,000	"	1,500	"	....	15 00	12 00
"	1,500	"	2,000	"	....	16 00	14 00
"	2,000	"	2,500	"	....	18 00	16 00
"	2,500	"	3,000	"	....	22 00	18 00

Over 3,000 tons register, one cent per ton additional inward, and one cent per ton additional outward.

Winter pilotage after November 30 up to and including April 30, shall be 20 per cent additional to the above rates on sail and steamships.

The payment of pilotage dues is compulsory in the Pilotage District of Louisburg, N.S.

E. G. WHITMAN,
Secretary.

PILOTAGE DISTRICT OF PICTOU, N.S.

Pilotage District				Date of Appointment	
Capt. H. M. K.				Oct. 19, 1912	
John R. Davies,....				Oct. 19, 1912	
.....				Oct. 19, 1912	
.....				Oct. 19, 1912	
.....				May 31, 1913	
Pilot		Date of Appointment.	Age	Earnings.	Amount paid to each.
				\$ cts.	\$ cts.
.....		May 26, 1899		191 08	191 08
Wm. McPherson,....		Mar. 3, 1903		249 80	249 80
Willard Fraser,....		April 29, 1903		192 71	192 71
Alfred M. Fraser,....		Dec. 1, 1914		207 31	207 31
				\$40 90	\$40 90

SESSIONAL PAPER No. 21

PILOTAGE DISTRICT OF PICTOU, N.S.—Continued.

White Flag ships licensed for the year.		Amount paid.
<i>Casapedia</i> (2 licenses).....		\$ 80 00
Vessels which paid pilotage dues.	Tonnage.	Amount paid.
		\$ cts.
British steam vessels...	11,490	485 50
British sailing vessels.....	444	7 00
Foreign steam vessels..	4,506	214 78
Foreign sailing vessels	3,394	166 12
	19,834	873 40
Pilot Boats.		Cost of Maintenance.
Blanche G. Smith No. 2..		\$ 100 00

RECEIPTS AND EXPENDITURE.

	Receipts.	Expendi- ture.
	\$ cts.	\$ cts.
Cash from pilotage.....	840 90	
2 licenses SS <i>Casapedia</i>	80 00	
Half pilotage.....	32 50	
Pilots' bonds.....	4 00	
Paid pilots.....		840 00
Part salary Secretary.....		116 50
	957 40	957 40

8 GEORGE V, A. 1918

PILOTAGE DISTRICT OF PICTOU, N.S.

PILOTAGE RATES.

			Inward.	Outward.
			\$ cts.	\$ cts.
Vessels of	120 tons to	240 ".....	6 00	4 00
"	141 "	200 "	10 00	6 00
"	200 "	300 "	12 00	8 00
"	300 "	400 "	14 00	9 00
"	400 "	500 "	15 00	10 00
"	500 "	600 "	16 00	11 00
"	600 "	700 "	17 00	12 00
"	700 "	800 "	18 00	13 00
"	800 "	900 "	19 00	14 00
"	900 "	1,000 "	20 00	15 00

Vessels of 1,000 tons and upwards, 2½ cents inwards, and 2 cents outwards.

All vessels under 120 tons \$4 inwards, and \$2 outwards.

Docking and moving vessels from anchorage in harbour. \$4 for each move.

The payment of pilotage dues is compulsory in the Pilotage District of Pictou, N.S.

G. ADAM PRINGLE,
Secretary.

PILOTAGE DISTRICT OF PARRSBORO, N.S.

Pilot Commissioners.				Date of Appointment.
Jas. E. Pettis.....				Jan. 24, 1881
Edward G. Cooper.....				Feb. 26, 1889
Johnson Spicer....				April 20, 1916
T. M. Dodsworth.....				April 20, 1916
Robert Dewis....				April 20, 1916

Pilots.	Date of Appointment.	Age.	Earnings.	Amount paid to each.
			\$ cts.	\$ cts.
Joseph Anderson.....	July 13, 1906	42	710 25	660 57
Eugene E. Jenks.....	June 7, 1916	50	26 75	24 88
James M. Gault.....	June 7, 1916	54	92 00	85 57
			829 00	771 02

SESSIONAL PAPER No. 21

PILOTAGE DISTRICT OF PARRSBORO, N.S. — *Concluded*

Vessels which paid pilotage dues.	Number.	Tonnage.	Amount paid.
			\$ cts.
British steam vessels.....	3	8,955	319 75
Foreign steam vessels.....	3	4,810	187 25
Foreign sailing vessels.....	9	4,038	322 00
	15	17,803	829 00

RECEIPTS AND EXPENDITURE.

	Receipts.	Expendi- ture.
	\$ cts.	\$ cts.
Pilotage dues..	829 00	
Paid Pilot Anderson.. . . .		660 57
Paid Pilot Jenks...		24 88
Paid Pilot McGrath.. . . .		85 57
Salary and Contingencies		57 98
	829 00	829 00

PILOTAGE RATES.

From isle Haute to Spencer island.....	\$ 1 25	per draft foot.
From isle Haute to Port Greville.....	1 25	" "
From isle Haute to Diligent River.....	1 50	" "
From isle Haute to West Bay.....	2 00	" "
From isle Haute to Partridge Island river.....	2 50	" "
From isle Haute to Moose or Harrington river.....	2 75	" "
From Spencer island to West Bay.....	1 25	" "
From Spencer island to Partridge Island river.....	1 50	" "
From West Bay to Partridge Island river.....	1 25	" "
On all outward bound vessels.....	1 50	" "

Steam vessels to pay 50 cents additional per foot on all the above rates. Vessels loading above Spencer island not to be obliged to take a pilot further than off Spencer island, if the pilot is taken further, fifty cents per draft foot extra.

That the sum of five dollars be charged on each vessel shifted by a pilot from the ballast ground to the loading berth if such service be required.

The payment of pilotage dues is compulsory in the Pilotage District of Parrsboro, N.S.

E. GILLESPIE,
Secretary.

8 GEORGE V, A. 1918

PILOTAGE DISTRICT OF PUGWASH, N.S.

Pilot Commissioners.	Date of Appointment.
Gordon McDonald..	April 24, 1911
Chas. M. Macfarlane..	April 22, 1913
Peter McLeod.....	April 22, 1913
Stanley Smith..	May 4, 1916
Chas. E. Woodlock.....	May 4, 1916
Alex. F. MacAulay.....	May 11, 1916

Pilots.	Date of Appointment.	Age.	Earnings.	Amount paid to each.
			\$ cts.	\$ cts.
Neil M. Ivor..	1887	57	110 12	110 12
Alfred Seaman..	1897	43		
Charles E. Reid..				
Isaac King.....	1915	44	15 00	15 00
Frank Seaman..	1916	40	121 37	121 37
			246 49	246 49

Vessels which paid pilotage dues.	Number.	Tonnage.	Amount paid.
			\$ cts.
Foreign sailing vessels.....	1	1,538	64 21
Foreign sailing vessels.....	5	3,508	145 74
	6	5,046	209 95
			36 54
			246 49

RECEIPTS AND EXPENDITURE

	Receipts.	Expenditure.
	\$ cts.	\$ cts.
Pilotage fees.....	246 49	
		246 49
	246 49	246 49

SESSIONAL PAPER No. 21

PILOTAGE DISTRICT OF PUGWASH, N.S.—*Concluded.**Pilotage Rates.*

The rates of pilotage dues at the ports of Pugwash, Port Philip or other loading places within the limits in the said district of Pugwash shall be as follows, on the register tonnage of the ship, viz:—

			Inwards.	Outwards.
			\$ cts.	\$ cts.
Vessels	80 and under	140 tons...	6 00	5 00
"	140	" 230 "	8 00	7 00
"	230	" 300 "	10 00	9 00
"	300	" 400 "	14 00	12 00
"	400	" 500 "	16 00	14 00
"	500	" 600 "	17 00	15 00
"	600	" 700 "	18 00	16 00
"	700	" 800 "	19 00	17 00
"	800	" 900 "	20 00	18 00
"	900	" 1,000 "	21 00	19 00
and all vessels over 1,000 tons shall pay 2½ cents per ton inwards and 2 cents per ton outwards, additional, on the register tonnage. All vessels under 80 tons accepting pilots, shall pay 5 cents per ton inwards and 4 cents per ton outwards.				

Vessels over 1,000 tons register after entering the harbour and being safely moored by a pilot, employing a pilot to be moved again to loading berth, dock or wharf from her first mooring, shall pay to the pilot so employed the sum of five dollars (\$5), and vessels under 1,000 tons register tonnage (except schooners of or under 300 tons) shall pay three dollars (\$3), for moving and mooring, to the pilot so employed. All steamers employing licensed pilots to be rated at net tonnage. Any vessel in charge of a pilot detained outside for the purpose of discharging ballast, to allow the pilot \$1.50 per day for such detention.

All vessels requiring the services of a pilot in going through the draw-bridges of Pugwash or Port Philip harbours, and going one and a-half miles up either river beyond said draw-bridges, shall pay in addition 2½ cents per ton each way.

The payment of pilotage dues is compulsory in the Pilotage District of Pugwash, N.S.

A. F. MACAULAY,
Secretary.

8 GEORGE V, A. 1918

PILOTAGE DISTRICT OF PORT MEDWAY, N.S.

Pilot Commissioners.	Date of Appointment.
I. W. L. Martin.	Aug. 8, 1898
J. Frederick Wolfe.	April 21, 1910
Charles A. Kennedy.	Mar. 28, 1912

Vessels which paid pilotage dues.	Number.	Tonnage.	Amount paid.
			\$ cts.
British steam vessels.	1	1,927	25 00
British sailing vessels.	1	270	5 00
Foreign steam vessels.	1	1,137	25 00
	3	3,334	55 00

RECEIPTS AND EXPENDITURE.

	Receipts.	Expendi- ture
	\$ cts.	\$ cts.
Pilotage fees.	55 00	
Port dues.		55 00
	55 00	55 00

PILOTAGE RATES.

	Inward.	Outward.
	\$ cts.	\$ cts.
Vessels from 120 tons to 300 tons.....	6 00	4 00
" 300 " 400 "	7 00	5 00
" 400 " 600 "	9 00	6 00
All vessels over 600 tons	12 00	8 00

Outward pilotage for all vessels of 200 tons and upwards to be compulsory.

The payment of pilotage dues is not compulsory in the Pilotage District of Port Medway, N.S.

.....
Secretary.

SESSIONAL PAPER No. 21

PILOTAGE DISTRICT OF RICHMOND, N.S.

Pilot Commissioners.	Date of Appointment.
Isidore LeBlanc.....	Feb. 23, 1894
William Babin.....	Feb. 23, 1894
Capt. Henry LeMarchant...	Aug. 25, 1905

Pilot.	Date of Appointment.	Age.	Earnings.	Amount paid to pilot.
Murdock Boudrot.....	1906	45	\$37 75	\$37 75

Vessels which paid pilotage.	Number.	Tonnage.	Amount paid.
			\$ cts.
British steam vessels..	1	146	11 25
British sailing vessels..	1	213	13 50
Foreign sailing vessels..	1	449	13 00
	3	808	37 75

RECEIPTS AND EXPENDITURE.

	Receipts.	Expenditure.
	\$ cts.	\$ cts.
Pilotage fees.....	37 75	
Pilot's license.....	5 00	
Paid pilot.....		37 75
Secretary..		5 00
	42 75	42 75

Pilotage Rates.

The following vessels when not exceeding 250 tons register tonnage are and shall be considered exempt from compulsory pilotage:—

1st. All vessels belonging to the county of Richmond.

2nd. All fishing vessels when they shall actually be engaged in the fisheries.

The following shall be the rates of pilotage:—

8 GEORGE V, A. 1918

PILOTAGE DISTRICT OF RICHMOND, N.S. *Continued*

				Inwards
				\$ cts.
Vessels of 80 tons and under 100 tons.....				5 50
“ 100 “ “ 150 “				6 50
“ 150 “ “ 200 “				7 50
“ 200 “ “ 250 “				9 00
“ 250 “ “ 300 “				10 00
“ 300 “ “ 350 “				11 00
“ 350 “ “ 400 “				12 00
and for every 50 tons or fraction thereof.				0 75

OUTWARDS.—One-half of the above rates.

The payment of pilotage dues is compulsory in the Pilotage District of Richmond County, N.S.

ISIDORE LEBLANC,
Secretary.

PILOTAGE DISTRICT OF ST. ANN'S, N.S.

Pilot Commissioners.			Date of Appointment.
Capt. Angus Cameron Esq., Capt. Joseph Stoddart Esq.			Aug. 1, 1914 Aug. 1, 1914
Pilots.	Age.	Earnings. \$ cts.	Amount paid to pilots. \$ cts.
James E. Macdonald	65	338 00	338 00
Arthur B. Macdonald	46		
Arthur Cameron Esq.	52		
Donald B. Cameron	47		
		338 00	338 00
Vessels which paid pilotage dues.	Number.	Tonnage.	Amount paid.
For 1914 ending 31st Dec.	10	5,236	\$338 00

SESSIONAL PAPER No. 21

PILOTAGE DISTRICT OF ST. ANN, N.S.—*Concluded.*

RECEIPTS AND EXPENDITURE.

	Receipts.	Expenditure.
	\$ cts.	\$ cts.
Pilotage fees.	338 00	
Paid pilots.		338 00
	338 00	338 00

PILOTAGE RATES.

	\$ cts.
Vessels of 120 tons to 200 tons.	7 00
" 200 " 250 "	8 00
" 250 " 300 "	9 00
" 300 " 350 "	12 00
" 350 " 400 "	13 00
" 400 " 450 "	14 00
" 450 " 500 "	15 00
" 500 " 600 "	16 00
" 600 " 700 "	17 00
" 700 " 800 "	18 00
" 800 " 900 "	19 00
" 900 " 1,000 "	20 00
" 1,000 " 1,500 "	21 00
" 1,500 " 2,000 "	24 00

The payment of pilotage dues is compulsory in the Pilotage District of St. Ann, N.S.

ANGUS CARMICHAEL,
Secretary.

PILOTAGE DISTRICT OF ST. JOHN, N.B.

Pilot Commissioners.	Date of Appointment.
Harold C. Schofield.....	Oct. 3, 1911
J. Willard Smith.....	Aug. 14, 1894
John C. Chesley.....	Oct. 31, 1912
James E. Cowan.....	Oct. 31, 1912
James Lewis.....	Oct. 31, 1912
Henry Finnigan.....	Oct. 6, 1913
Wm. R. Bennett.....	May 23, 1916
J. U. Thomas (appointed Secretary-Treasury)	May 20, 1885

8 GEORGE V, A. 1918

PILOTAGE DISTRICT OF ST. JOHN, N.B.—Continued.

Pilots.	Date of Appointment.	Age.	Earnings.	Amount paid to each
			\$ cts	\$ cts.
1 John F. Abbott.....	1915	23		60 25
2 James Bennett.....	1882	59		2,271 98
3 Alfred Cline.....	1878	59		1,219 87
4 Richard B. Cline.....	1898	45		1,141 25
5 Joseph Doherty.....	1874	70		3,724 21
6 Robert Doherty.....	1908	31		4,015 96
7 William Murray.....	1899	42		3,729 75
8 James N. Miller.....	1899	36		2,286 99
9 Fenwick M. McKelvey.....	1908	30		3,760 24
10 Bartholomew Rogers.....	1881	59	42,272 48	3,598 98
11 William J. Spears.....	1908	30		2,271 94
12 James Spears.....	1874	71		497 52
13 William Scott.....	1878	60		2,271 97
14 William P. Scott.....	1916	24		297 63
15 Thomas J. Stone.....	1874	63		2,801 48
16 Thomas Traynor.....	1874	63		2,271 97
17 William Traynor.....	1915	24		530 60
18 John S. Thomas.....	1874	68		208 95
On hand in advance.....				9 25
			42,272 48	36,970 79

Amount of pilotage received.....	\$ 42,272 48
25c. per foot from outward pilotage.....	\$ 2,447 44
7 % from net pilotage.....	2,854 25
	\$ 36,970 79

Apprentice Pilots.	Date of Appointment.	Age.
George W. Miller....	1914	16
George Miller.....	1915	17
Wm. Stanley Kelley	1914	17
Wm. B. Alexander...	1915	15
Louis Doyle.....	1916	18

Pilot Boats.	Cost of Maintenance.
Howard D. Troop No. 1 David Lynch No. 2.....	Owned and maintained by the pilots.

SESSIONAL PAPER No. 21

PILOTAGE DISTRICT OF ST. JOHN, N.B.—Continued.

Vessels which paid pilotage dues	Number.	Tonnage.	Amount paid.
			\$ cts.
British steam vessels.....	304	1,002,043	31,616 51
British sailing vessels.....	68	28,683	2,370 53
Foreign steam vessels.....	48	66,772	3,476 30
Foreign sailing vessels.....	143	51,608	4,809 14
	563	1,149,106	42,272 48

PENSION FUND.

	\$ cts.	\$ cts.
Province of New Brunswick Bonds	5 %	15,000 00
1 Canadian War Loan.....	5 %	976 25
1 Canadian War Loan.	5 %	972 21
Cash in Bank of Nova Scotia		464 27
		17,412 73

RECEIPTS AND EXPENDITURE.

	Receipts.	Expenditure.
	\$ cts.	\$ cts.
Balance in Bank, 31st December, 1915.....	1,392 95	
25c. per foot from outward pilotage.....	2,447 44	
7 % from net pilotage.....	2,854 25	
License Fees—		
17 pilots.....	85 00	
2 pilot boats.....	20 00	
Interest—		
Province of N.B. bonds.....	750 00	
Canadian War Loan..	25 00	
Investments Account—		
Canadian War Loan, \$1,000.		976 25
Canadian War Loan, \$1,000		972 21
Pension Account—		
Pilots		1,854 92
Widows.....		1,493 75
Expense Account—		
Secretary's salary.....		1,000 00
Rent.....		300 00
Auditing, 1915 and 1916.....		80 00
Stationery, printing, etc		46 30
Legal expenses.....		100 00
Office furniture.....		180 00
Electric fixtures.....		13 85
Surety bond premium.....		20 00
Telephone.....		45 00
Accrued interest on bond.....		12 09
Sundries		16 00
Balance in Bank of Nova Scotia.....		464 27
	\$ 7,574 64	7,574 64

8 GEORGE V, A. 1918

PILOTAGE DISTRICT OF ST. JOHN, N.B. *Continued*

PILOTAGE RATES

Steamships.			Inward.
1st District	per foot draught of water		\$2 00
2nd District....	" "		2 50
3rd District....	" "		3 00
			Outward.
Steamships to Patridge island.....	" "		1 75
Down the bay of Fundy (not compulsory)	" "		2 75
Sailing Vessels.			Inward.
1st District	per foot draught of water		\$1 50
2nd District	" "		1 75
3rd District.	" "		2 25
			Outward.
Sailing vessels to Patridge island	" "		1 25
Down the bay of Fundy (not compulsory)	" "		2 00
Transporting Vessels.			
Up to 500 tons register.....			2 50
Of 500 tons and up to 1,000 tons...			5 00
Of 1,000 tons and up to 4,000 tons			10 00
Of 4,000 tons and over.....			15 00

The payment of pilotage dues is compulsory in part in the Pilotage District of St. John, N.B.

J. U. THOMAS,

Secretary.

PILOTAGE DISTRICT OF MIRAMICHI, N.B.

Pilot Commissioners.	Date of Appointment.
John C. Miller....	April 12, 1893
Wm. B. Marshall	April 12, 1893
Ernest Hutchison	April 12, 1893
John P. Burchill..	Mar. 7, 1913
Wm. M. Sinclair..	Feb. 15, 1916

SESSIONAL PAPER No. 21

PILOTAGE DISTRICT OF MIRAMICHI, N.B.—Continued

Pilots.	Date of Appointment.	Age.	Earnings.	Amount paid to each.
			\$ cts.	\$ cts.
1 Louis Jimmo.....	May 29, 1875	62	1,425 07	828 42
2 Maxime Martin.....	July 10, 1869	71	702 52	585 84
3 Alex. Wilson.....	July 10, 1871	70	900 10	585 84
4 Robt. J. Walls.....	July 12, 1870	65		630 49
5 Wm. Walls, Sr.....	April 20, 1875	62	696 45	585 84
6 Geo. Sutton.....	April 28, 1878	65	872 12	585 84
7 James A. Nowlan.....	April 28, 1878	61	811 76	585 84
8 Jos. Jimmo.....	April 28, 1879	61	1,436 48	828 42
9 James McCallum.....	April 28, 1880	72	816 95	585 84
10 John Martin.....	April 28, 1880	57	1,297 17	828 42
11 Asa Walls.....	June 23, 1880	57	775 11	585 84
12 Wm. Walls, jr.....	May 20, 1882	59	880 48	585 84
13 John Nowlan.....	June 21, 1872	60	707 43	585 84
14 Mike J. Jimmo.....	Nov. 1, 1899	49	1,149 98	840 58
15 Geo. M. Nolan.....	Nov. 2, 1899	60	820 40	585 84
16 Geo. Savoy.....	Mar. 10, 1871	72	951 73	858 09
			14,243 75	\$ 10,672 82

Vessels which paid pilotage dues.	Number.	Tonnage.	Amount paid.
			\$ cts.
British steam vessels.....	17	36,092	2,967 43
British sailing vessels.....	7	2,352	290 68
Foreign steam vessels.....	39	42,510	4,912 51
Foreign sailing vessels.....	117	29,975	6,073 13
	180	110,929	14,243 75

Pilot Boats.	Cost of Maintenance.
	\$ cts.
Princess Louise.....	242 14
Senator Snowball.....	296 33
Admiral Beatty.....	2,646 55
Mabel.....	
(Paid by pilots independent of club).	
	3,185 02

PILOTAGE DISTRICT OF MIRAMICHI, N.B.—Continued

Receipts and Expenditure.	Receipts	Expenditure.
	\$ cts.	\$ cts.
Inward pilotage	7,928 67	
Outward pilotage.....	5,666 58	
Removals.....	648 50	
R. J. Walls' payment.....	100 00	
Balance from 1915	104 69	
Commission and other expenses		590 60
Maintenance of pilot boats		3,185 02
Paid pilots		10,672 82
	14,448 44	14,448 44

The rates of pilotage for the district of Miramichi, N.B., shall be as follows:—

For sailing vessels up to 300 tons register a flat rate of \$25 for each such vessel and six cents per registered ton when inward bound and six cents per registered ton when outward bound.

For sailing vessels over 300 tons register and not exceeding 500 tons register a flat rate of \$25 per vessel and five cents per registered ton inwards, and five cents per registered ton outwards.

For sailing vessels over 500 tons register and up to 700 tons register a flat rate of \$25 per vessel and four and one-half cents per registered ton inwards, and four and one-half cents per registered ton outwards.

For sailing vessels over 700 tons register and up to 1,000 tons register a flat rate of \$20 per vessel and four cents per registered ton inwards and four cents per registered ton outwards.

For sailing vessels over 1,000 tons register and up to 1,300 tons register a flat rate of \$15 per vessel and three and one-half cents per registered ton inwards, and three and one-half cents per registered ton outwards.

For sailing vessels over 1,300 tons register a flat rate of \$15 per vessel and three cents per registered ton inwards, and three cents per registered ton outwards.

Pilotage rates for steamers up to 1,000 tons register, a flat rate of \$25 per vessel and five cents per registered ton inwards and five cents per registered ton outwards.

Steamers over 1,000 tons register and up to 1,500 tons register, a flat rate of \$20 per vessel, and five cents per registered ton inwards, and five cents per registered ton outwards.

Steamers over 1,500 tons register and up to 1,700 tons register, a flat rate of \$20 per vessel, and four and one-half cents per registered ton inwards, and four and one-half cents per registered ton outwards.

Steamers over 1,700 tons register and up to 2,000 tons register, a flat rate of \$20 per vessel, and four cents per registered ton inwards, and five cents per registered ton outwards.

Steamers over 2,000 tons register, a flat rate of \$20 per vessel, and three and one-half cents per registered ton inwards, and three and one-half cents per registered ton outwards.

In the case of Canadian owned and registered vessels employed on coasting voyages, a rebate of \$10 on the flat rate will be made.

Vessels must be docked within 24 hours after arrival, otherwise the regular moving rate shall be charged.

SESSIONAL PAPER No. 21

PILOTAGE DISTRICT OF MIRAMICHI, N.B. *Continued*

Moving.

For all vessels over 300 tons register and under 600 tons register between Black Brook and Newcastle (below bridge), \$10. Move not exceeding 2 miles, \$6.

For vessels over 600 tons register, Black Brook to Newcastle, \$15. All vessels moved not exceeding 2 miles, \$6.

All vessels moved through the bridge at Newcastle, 300 tons register to 600 tons register—extra \$2.50, and 600 tons register and over \$5 extra.

This extra charge applies to moves only.

Between Sinclair's and any point above bridge, vessels 300 tons register to 600 tons register, \$6; 600 tons register and over, \$10.

If a pilot is detained on any vessel going to sea for over forty-eight hours within the district the vessel shall pay \$5 per day for every day, or part of day, he is detained.

The payment of pilotage dues is compulsory in the Pilotage District of Miramichi, N.B.

D. T. JOHNSTONE,
Secretary.

PILOTAGE DISTRICT OF RESTIGOUCHE, N.B.

Pilot Commissioners.			Date of Appointment.
Wm. Fraser Napier.....			Dec. 6, 1905
David Champoux.....			Feb. 8, 1907
John T. Mowat.....			Feb. 9, 1912
James E. Stewart.....			Mar. 2, 1912
James Wallace.....			Mar. 25, 1915

Pilots.	Age.	Earnings.	Amount paid to each.
		\$ cts.	\$ cts.
Edward Elsliger.....	51	5,939 54	913 58
Joseph Elsliger.....	61		913 58
William Donahue.....	49		913 58
Daniel McNeil.....	40		913 58
Neils Neilson.....	42		913 58
Chas. Robertson.....	32		913 58
		5,939 54	5,481 48

Vessels which paid pilotage dues.	Number.	Tonnage.	Amount paid.
			\$ cts.
British steam vessels.....	16	39,525	1,922 59
Foreign steam vessels.....	25	27,488	1,964 93
Foreign sailing vessels..	43	24,425	2,052 02
	84	91,438	5,939 54

8 GEORGE V, A. 1918

PILOTAGE DISTRICT OF RESTIGOUCHE, N.B. *Contd.*

PILOT BOATS.

No. 1
No. 2 } (No separate accounts kept for each boat, pilots running the three boats together.)
No. 3 }

RECEIPTS AND EXPENDITURE

	Receipts	Expenditure.
	\$ cts.	\$ cts.
Pilotage fees	5,939 54	
Commission including secretary's salary		178 19
Pilots' expenses and upkeep of boats, etc.		249 87
Cash paid pilots		5,481 48
Balance in bank		30 00
	5,939 54	5,939 54

Pilotage Rates.

The rates of pilotage including the properly securing and mooring all ships or vessels piloted by the several pilots within the Pilotage District of Restigouche, shall be as follows:—

For ever foot of water any ship or vessel shall draw at the time, inward or outward bound, ports of Dalhousie, Benjamin, Beaver Point, Nash Creek, Jacquet river, or any loading station east of Dalhousie on the bay of Chaleur, one dollar; port of Campbellton, one dollar and fifty cents; Oak Bay or any loading station east of same; west of Dalhousie, one dollar and twenty-five cents, when ships proceed direct from sea.

Ship bound for Dalhousie, Benjamin, Beaver Point, Nash Creek, Jacquet river, or any loading station east of Dalhousie, calling at any of the said harbours for orders, or to discharge ballast, cargo, or otherwise on ship's account, one dollar; and thence to any other of the said ports or loading stations on the bay of Chaleur, fifty cents per foot on draught of such ship at the time.

Ship bound for Campbellton, Oak Bay, or any loading station east of Oak Bay and west of Dalhousie, waiting at Dalhousie or at any of the outer or bay ports to discharge ballast, cargo, or otherwise, on ship's account, one dollar; and thence to the said port of Campbellton, seventy-five cents; Oak Bay or any loading station east of Oak Bay and west of Dalhousie, fifty cents per foot on draught of such ship at the time and vice versa.

For the removal of any ship including the properly securing and mooring such ship the following rates, viz: The sum of one dollar and fifty cents for ships not exceeding 120 tons; the sum of two dollars for ships over 120 tons and not exceeding 200 tons; the sum of three dollars for ships over 200 hundred tons and not exceeding 300 tons; the sum of four dollars for ships over 300 tons, and not exceeding 600 tons; and the sum of five dollars for all ships over 600 tons; and when the distance of removal extends four miles, fifty per cent additional to above rates. In addition to above rates all vessels propelled wholly or in part by steam shall pay one cent inwards and one cent outwards per net register tonnage.

The payment of pilotage dues is compulsory in the Pilotage District of Restigouche, N.B.

A. F. CARR,
Secretary.

SESSIONAL PAPER No. 21

PILOTAGE DISTRICT OF BATHURST, N.B.

Pilot Commissioners.	Date of Appointment.
John J. S. Hachey...	May 16, 1903
Henry White.. . . .	Sept. 20, 1904
Thomas Canty.. . . .	Aug. 30, 1907
Oscar Fenwick.....	Mar. 25, 1915
James J. Power....	June 15, 1912

Pilots.	Earnings.	Amount paid to each.
	\$ cts.	\$ cts.
Wm. Daley.. . . .	644 58	608 74
Peter Roy.. . . .	704 16	665 48
D. R. Ronolds....	103 61	102 50
Frank Curwin.		
	1,452 35	1,376 72

Vessels which paid pilotage dues.	Number.	Tonnage.	Amount paid.
			\$ cts.
British steam vessels..	6	15,381	615 32
British sailing vessels	2	395	47 00
Foreign steam vessels.....	7	7,792	423 38
Foreign sailing vessels.....	12	4,454	366 65
	27	28,022	1,452 35

RECEIPTS AND EXPENDITURE.

	Receipts.	Expenditure.
	\$ cts.	\$ cts.
Pilotage fees.....	1,452 35	
Paid pilots.....		1,376 72
Commission 5% of \$1,452.35.		72 63
Inspector's inspection of pilot boats...		3 00
	1,452 35	1,452 35

PILOTAGE DISTRICT OF BATHURST, N.B. *Continued.*

Pilotage Rates. -

The rates of pilotage for the district of Bathurst, N.B., shall be as follows:—

Inwards.

- From sea to the ballast ground outside, \$1.20 per foot draught of water.
- From sea to any place above the ballast ground, \$1.40 per foot draught of water.
- From the ballast ground to inside the harbour above the usual loading ground outside the bar, \$0.75 per foot draught of water.

Outwards.

- From the usual loading ground outside the bar, \$1.20 per foot draught of water.
- From any place inside the harbour, \$1.40 per foot draught of water.

Moorings.

- From ballast ground to loading berth outside the bar, \$4.
- From one loading berth to another inside the harbour, \$4.
- In addition to the above rates any vessel propelled wholly or in part by steam shall pay two cents (2 cts.) per net registered ton.
- The payment of pilotage dues is compulsory in the Pilotage District of Bathurst, N.B.

JOSEPH HENDERSON,
Secretary.

PILOTAGE DISTRICT OF CARAQUET, N.B.

First Commandants		Date of Appointment.
Geo. LeRiche	.....	April 6, 1903
Henri Deshay	.....	June 29, 1910
Chas. L. Robitaille	.....	June 29, 1910
Peter J. Fort	.....	July 7, 1913
Colman Hayward	.....	Nov. 11, 1881

Pilots.	Earnings	Amount paid to each.
	\$ cts.	\$ cts.
James J. Gagnier		
Alexander J. Wainwright		
Joseph N. Fortin		
Therese H. LeBlond		
Joseph N. Gagnier	50 20	50 20
Joseph Martin	8 00	8 00
	67 20	67 20

SESSIONAL PAPER No. 21

PILOTAGE DISTRICT OF CARAQUET, N.B.—*Concluded.*

Vessels which paid pilotage dues.	Number.	Tonnage.	Amount paid.
			\$ cts.
British sailing vessels.....	4	339	50 40
Foreign sailing vessels.....	1	258	16 80
	5	597	67 20

RECEIPTS AND EXPENDITURE.

	Receipts.	Expenditure.
	\$ cts.	\$ cts.
Pilotage fees.....	67 20	
Paid pilots.. . . .	.....	67 20
	67 20	67 20

PILOTAGE RATES.

\$1.20 per foot inwards.
1.00 per foot outwards.

The payment of pilotage dues is compulsory in the Pilotage District of Caraquet, N.B.

COLSON HUBBARD,
Secretary.

PILOTAGE DISTRICT OF HARVEY AND ALMA, N.B.

Pilot Commissioners.	Date of Appointment.		
Major C. Anderson.....	June 29, 1901		
Ira Copp.....	Mar. 16, 1912		
Rainsford Butland.....	Mar. 16, 1912		

Pilots.	Date of Appointment.	Age.	Earnings.
			\$ cts.
Bedford Dickson.....	1916	35	310 11
Capt. David T. Alexander.....	1916	62	148 20
Capt. Arthur Edgett.....	1916	58	95 75
			554 06

8 GEORGE V, A. 1918

PILOTAGE DISTRICT OF HARVEY AND ALMA, N.B.—*Concluded.*

Vessels which paid pilotage dues.	Number.	Tonnage.	Amount paid.
			\$ cts.
British steam vessels.	6	14,271	467 88
British sailing vessels.	1	267	14 68
Foreign steam vessels.	1	2,200	71 50
	8	16,738	554 06

Pilot Boats	Cost of Maintenance.
	\$ cts.
Hand.	75 00
Myrtle new boat	295 00
Clara C.....	20 00
	390 00

RECEIPTS AND EXPENDITURE.

	Receipts.	Expenditure.
	\$ cts.	\$ cts.
Pilotage fees.....	554 06	
Upkeep of boat		390 00
Paid pilots		164 06
	554 06	554 06

Pilotage Rates.

From 1 to 2 cents per registered ton according to distance.
The payment of pilotage dues is compulsory in the Pilotage District of Harvey and Alma, N.B.

MAJOR C. ANDERSON,
Secretary.

SESSIONAL PAPER No. 21

PILOTAGE DISTRICT OF RICHIBUCTO, N.B.

Pilot Commissioners.	Date of Appointment.
Wm. J. Brait....	May 8, 1888
Frank Curran....	June 21, 1909
Fred Ferguson....	June 21, 1909
W. E. Forbes....	June 21, 1909
Richard O'Leary....	June 21, 1909

Pilots.	Amount paid to pilots.
	\$ cts.
Albert Long...	{ 350 00
John Curwin.	
	350 00

Vessels which paid pilotage dues.	Number.	Tonnage.	Amount paid.
			\$ cts.
Foreign sailing vessels..	12	1,985	350 00
	12	1,985	350 00

RECEIPTS AND EXPENDITURE.

	Receipts.	Expenditure.
	\$ cts.	\$ cts.
2 pilot's licenses.....	2 00	
Secretary.....		2 00
	2 00	2 00

\$1.50 per foot inward.
\$1.50 per foot outward.

Pilotage Rates.

The payment of pilotage dues is compulsory in the Pilotage District of Richibucto, N.B.

FRED. FERGUSON,
Secretary.

8 GEORGE V, A. 1918

PILOTAGE DISTRICT OF SHEDIAC, N.B.

Pilot Commissioners.	Date of Appointment.
Michael Connors.	Jan. 12, 1906
D. J. Doiron.....	Jan. 12, 1906
Geo. M. Davis.	Jan. 12, 1906
J. Chas. Roberts..	Jan. 12, 1906
Ed. R. McDonald.	Jan. 12, 1906
(Apptd. Secty.).	Aug. 21, 1907

Pilots	Age	Earnings	Amount paid to pilots.
Thomas McGrath.	70	\$ cts.	\$ cts.
Oluf Hendrickson.	55	70 90	69 49
Paul R. LeBlond.	72		
		70 90	69 49

Vessels which paid pilotage dues	Number.	Tonnage	Amount paid.
Foreign steam vessels.....	1	760	\$70 90

RECEIPTS AND EXPENDITURE

	Receipts.	Expenditure.
	\$ cts.	\$ cts.
Pilotage fees.	70 90	
Paid pilots.		69 49
Commission on pilotage dues.....		1 41
	70 90	70 90

Pilotage Rates.

The rates of pilotage for this district are \$1.50 per foot draught of water for vessels, inwards; \$1.50 per foot draught of water for vessels outward bound, and for the removal of any ships or vessels properly secured and moved, the sum of \$4 for each such removal, hauling a vessel into wharf or dock from the stream not to be considered a removal.

It was ordered on the 30th May, 1908, that all ships or vessels propelled by steam or driven by power other than sails shall pay 4 cents per ton on their register tonnage in addition to the above rates.

The payment of pilotage dues is compulsory in the Pilotage District of Shediac, N.B.

E. R. McDONALD,
Secretary.

SESSIONAL PAPER No. 21

PILOTAGE DISTRICT OF SHEPODY BASIN, N.B.

Pilot Commissioners.	Date of Appointment.
Robert C. Bacon...	June 24, 1911
Geo. R. Paysant.	June 24, 1911
Watson Steeves	Oct. 10, 1912
Isaac C. Prescott...	Oct. 10, 1912
Capt. B. T. Carter.	Oct. 10, 1912

Pilots.	Date of Appointment.	Age.	Earnings.
			\$ cts.
Luther C. Martin.....	April, 1916..	67	253 81
John J. Christopher...	April, 1914...	53	57 74
William J. Milburn.	April, 1914..	46	171 88
			483 43

Vessels which paid pilotage dues.	Number.	Tonnage.	Amount paid.
			\$ cts.
British steam vessels..	5	227	25 00
British sailing vessels	10	8,159	285 53
Foreign sailing vessels.....	12	4,940	172 90
	27	13,326	483 43

Pilot Boats.—L. C. Martin, No. 1. *Leo* No. 2. William J. Milburn. (Pilots own and maintain the boats themselves.)

RECEIPTS AND EXPENDITURE.

	Receipts.	Expenditure.
	\$ cts.	\$ cts.
Pilotage fees...	483 43	
Luther C. Martin—Pilot license for 1 year to April, 1917..	10 00	
Luther C. Martin—Boat license.	2 00	
John J. Christopher—Pilot license for 2 years to April, 1918.....	20 00	
John J. Christopher—Boat license.	2 00	
William J. Milburn—Pilot license for 2 years to April, 1918.....	20 00	
William J. Milburn—Boat license.....	2 00	
Paid pilots.....		483 43
Watson H. Steeves (services and expenses)...		16 67
Isaac C. Prescott (services and expenses)...		16 67
B. T. Carter (services and expenses)...		16 66
B. T. Carter (inspecting boats and granting licenses).		6 00
	539 43	539 43

8 GEORGE V, A. 1918

Pilotage Rates.

Inward pilotage, 1½ cents per registered ton.

Outward pilotage, 2 cents per registered ton.

Removal of vessels under 500 tons: distances under 4 miles, \$4; above 500 tons register, distances under 4 miles, \$5. When the distance exceeds 4 miles, 50 cents additional.

The payment of pilotage dues is compulsory in the Pilotage District of Shepody Basin, N.B.

B. T. CARTER,

Secretary.

APPENDIX No. 10.
SIGNAL STATION, CITADEL, HALIFAX, N.S.

RECORD of Shipping, as per record folio from April 1, 1916, to March 31, 1917.

R.—Reported. A.—Arrived. P.—Passed.

Months.	Men of War, British.			Men of War, Foreign.			Steamers, 1st Class.			Steamers, 2nd Class.			Ships, Barques, Brigantines.			Brigs and Brigantines.			Schooners, 3 mast, or bear- ing private signals			Monthly Totals.		
	R.	A.	P.	R.	A.	P.	R.	A.	P.	R.	A.	P.	R.	A.	P.	R.	A.	P.	R.	A.	P.	R.	A.	P.
1916 17.																								
April...	4	4					72	68		20	20		5	5		1			11	11		112	108	4
May...	5	5					65	65		30	30		7	7		1			12	12		120	120	
June...	8	8					55	55		40	40		2	2		1			12	12		118	118	
July...	7	7		1			55	55		37	37		3	3					14	14		117	117	
August...	7	7					69	69		39	39		6	6		1			21	21		143	143	
September	10	10		2			83	83		42	42		4	4					16	16		155	155	
October...	7	7					61	61		40	40		3	3					7	7		120	120	
November...	7	7		1			56	56		37	37		1	1					11	11		112	112	
December...	5	5		2			77	77		29	29		1	1					3	3		116	116	
January...	5	5					84	84		32	32								6	6		129	129	
February...	5	5		1			125	125		18	18								5	5		153	153	
March...	4	4					202	202		20	20		3	3					3	3		233	233	
	74	74		7		4	1,004	1,000		384	384		35	35		3			121	121		1,628	1,624	4

Total vessels reported.....	1,628
" arrived.....	1,624
" passed.....	4

W. W. NAVIS, Lieut. R.C.F.,
Supt. of Signals.

APPENDIX No. 11.

SABLE ISLAND.

SABLE ISLAND, February 1, 1917.

Agent, Marine and Fisheries,
Halifax, N.S.

SIR,—I beg to submit herewith my annual report for 1916. Work done on buildings at main station: a new storehouse in place of one condemned, part of roof of men's dwelling shingled, shingled part of roof of superintendent's dwelling, a platform around wagon house, and a new sill under the front of it, and minor repairs to a number of other buildings. No. 4 station: shifted, doors in barns to avoid sand drifts. East light: repaired barn extensively. Boats and life-saving apparatus on hand the same as last year, and all in fairly good condition except two racket lines which need renewing.

Cattle killed, six; with an aggregate weight of 3,100 pounds.

Killed five hogs; aggregate weight 1,090 pounds.

Crops as follows: Hay, excellent; potatoes a failure; other roots normal.

Boat drills, eight. Beach apparatus drills, eight. Flag drills, four.

Number of times patrolled beach in fog: a.m., seventy-nine; p.m., sixty-nine; total, 148.

The total population of the island, including four wireless operators, forty-seven.

The year has been very uneventful, giving very little to report.

J. U. BLAKENEY,

Superintendent, Sable Island.

SESSIONAL PAPER No. 21

APPENDIX No. 12.

ABSTRACTS FROM THE ANNUAL REPORTS OF AGENCIES OF THE DEPARTMENT OF MARINE AND FISHERIES.

The annual reports of the agents of this department are necessarily too voluminous for publication. Abstracts from these reports have accordingly been made.

CHARLOTTETOWN AGENCY.

The marine wharf was taken over by the Department of Railways and Canals on the 7th of May, 1916, some repairs made and was handed back in the month of March, 1917. The wharfage received was \$2,400.

The winter mail service between Cape Traverse and Cape Tormentine was in operation from the 1st to the 19th of April, 1916, when it ceased operation; and on August 23 was transferred to the Department of Railways and Canals, and all boats and boat-houses were transferred on the 20th September, 1916. The expenditure on this service during the season of 1916 was \$3,024.28 and the revenue \$30.

There are five combined gas and whistling buoys, two gas only, four Courtney whistling, four American pattern bell buoys and two gas buoys at Wallace, N.S., 5 unlighted bell, twenty-six conical, twenty-one can, twenty-one spar and one barrel, buoys, maintained by this agency. There are one American and two Trinity bell buoys in stock. The number of lights and lightkeepers is 52, the government wharves 34, revenue collected from which is \$1,195.56 and remitted, \$898.32.

DOMINION STEAMERS.

Stanley.

The *Stanley* was on the Pictou-Georgetown route on the 1st of April, 1916, was detained in Georgetown by ice on the 5th, made a round trip on the 6th, got rudder twisted on the 8th, was at Pictou until the 13th, made trip on the 14th, went to the relief of schooner *Annie Parker* on the 15th, left Georgetown on the 16th, made daily trip until the 22nd, when she was detained at Pictou by heavy ice, made daily trips from the 24th until the 29th, when she was laid up at Pictou; and on the 2nd May was taken over by the Department of Railways and Canals.

The *Stanley* arrived at Halifax for repairs on the 3rd of June, was laid up for repairs there until the 25th, took in supplies from July 25th to 31st, started on an inspection cruise August 2nd and was transferred to the Charlottetown agency on the 7th.

She arrived again at Halifax on the 23rd February, and for the rest of the month was breaking ice in Bedford basin and taking on supplies. During March, she broke ice at Shelburne, N.S., landed supplies at western shore ports; left Louisburg with mails for Magdalen islands on the 22nd, broke rudder, returned to Halifax on the 24th and was put up for repairs.

The *Stanley* made 16 single trips, carried 1,784,049 pounds of freight, 78,341 pounds of expressage, 454 passengers, furnished 294 meals and 95 berths. She earned \$1,201.19 from freight, \$159.22 from expressage, \$596.50 from passengers, \$29.40 from meals, and \$95 from berths, amounting in all to \$2,081.31. The meals were furnished by the steward who paid the ship ten cents for each meal for the privilege.

8 GEORGE V, A. 1918

Prince Edward Island.

The *Prince Edward Island* was on the Charlottetown-Pictou route on the 1st of April, 1916, made regular single trips until the 23rd, left Charlottetown on that date to render assistance to the schooner *Wapiti*, stuck in ice three miles from West Point, P.E.I., towed her to Summerside, returned to Charlottetown and was transferred to the Department of Railways and Canals on the 22nd of May. The ship made 27 single trips and carried 9,190,665 pounds freight, 112,547 pounds expressage, 1,317 passengers, furnished 240 meals, 4 berths, and earned \$5,414.34 from freight, \$225.09 from expressage, \$1,802.25 from passengers, \$24 from meals, \$4 from berths and \$31 from war tax.

The meals on the government steamers are furnished by the steward who pays the steamer ten cents per meal for the privilege.

Brant.

The *Brant* was at the marine wharf Charlottetown at the beginning of the fiscal year undergoing cleaning, painting, and fitting buoys for service, and began work on the 12th May placing Battery point and Rosebank buoys in position, left for the western coasts on the 16th; and after working in that section returned to Charlottetown on the 6th of June, and continued placing buoys until the 20th June, when she sailed on a supply trip around the island. She returned to Charlottetown on the 4th of July, took more supplies on board, and on the 11th sailed to supply western lights. Returning to Charlottetown on the 21st July, she continued ordinary work until the 21st, then inspected Caribou bell buoy. She was in the lighthouse supply service of New Brunswick from the 8th until the 12th of August, worked continuously, left for Wallace to repair Oak island and other buoys, returned on the 30th, worked on buoy service, lifted Charlottetown harbour buoys on the 6th of December, lifted Shenogue buoys from 11th to 14th, returned and was laid up at wharf for the winter.

ST. JOHN AGENCY.

There are 152 lightstations in the province, including thirty-two range lights, sixteen light and fog alarms combined, three fog bells at lighthouses, one lightship marking Lurcher shoal, bay of Fundy, equipped with submarine bell, diaphone and modern lighting apparatus.

There are two signal stations in the bay of Fundy—Brier island, N.S., and Partridge island, N.B.

The agency maintains 17 gas-bell and whistling buoys, 8 automatic whistling buoys, 27 bell buoys, 61 can and conical buoys and 30 spar buoys 40 feet long and upwards.

New lights have been erected at Cape Tormentine range, besides new range lights for the Cape Tormentine and Prince Edward Island car-ferry.

Illuminating oil, amounting to 33,688 gallons, at a cost of \$7,367.94, and 27,560 gallon of fuel oil, costing \$5,594.68, was supplied by the Imperial Oil Company.

Repairs and cleaning found absolutely necessary were made at the stations, and the Lurcher light-ship had repairs or changes made to hull, machinery and electrical apparatus.

DOMINION STEAMERS.

Lansdowne.

The *Lansdowne* sailed from St. John on the 5th April, 1916, placed Quaco ledge gas and whistling buoy, the Cross-bars shoal gas buoy in position on the 20th, the Avon river buoys on the 26th, returned to St. John; and the SS. *Principessa*

SESSIONAL PAPER No. 21

Letitia, while docking, collided with her, breaking the *Lansdowne's* starboard anchor, which damage was repaired by the other steamer's owners. From the 1st to the 12th May, the ship lay up at St. John, undergoing repairs to boilers, sailed on the 16th, continued in the buoy service until the 26th July and then sailed to Old Proprietor ledge to assist a stranded steamer.

She sailed on the 27th July on an inspection cruise, having many officials aboard, returned on the 1st August, did ordinary buoy work until she established a bell buoy at east entrance of Petite passage, St. Mary bay, on the 18th October. The *Lansdowne* continued buoy service until the 14th February, 1917. When leaving Yarmouth harbour, the ice cut through her planking. She began to leak so badly that the agent and assistant ship's husband ordered repairs made. The repairs were completed on the 20th, she sailed for St. John on the 22nd, and was put out of commission on the 28th February, 1917.

During the season she was under way 977 $\frac{1}{4}$ hours, and sailed 6,214 miles.

Aberdeen.

The *Aberdeen* sailed from St. John, on her first cruise, on the 10th April, 1916. She worked continuously in the lighthouse and buoy service, except when on special service or when delayed by accidents.

On the 27th April a fire broke out on board, which was extinguished by the ship's apparatus without material injury to the ship.

While at Killam's wharf, Yarmouth, on the 6th July, the *Aberdeen* collided with Cann's wharf, without doing much injury to either vessel or wharf.

She sailed to Boar's head on the 5th August, towed the disabled *Curlew* to safe anchorage off Westport, N.S., and gave her 1,500 gallons of fresh water. On the 22nd September, she sailed to Digby neck, where the tug *Mikado* was stranded, attempted to pull her off but failed.

The *Aberdeen* went into dry dock at Halifax on the 2nd November, had repairs made to her bottom and sailed for St. John for further repairs, remained there until the 5th March, delivered supplies and attended to buoys until the 29th March, when she was laid up at St. John.

She sailed 7,542 miles, and was under steam 1,164 hours.

HALIFAX AGENCY.

During the fiscal year ending 31st March, 1917, the following aids to navigation have been in operation: 258 lighthouses, exhibiting 263 lights, 38 pole lights, 14 electric lights (1 in private dwelling), 2 light vessels, 1 explosive fog alarm, 21 diaphones, 1 reed trumpet, 4 steam fog whistles, 57 hand horns, 6 mechanical fog bells, 23 combined gas and whistling buoys, 10 combined gas and bell buoys, 5 gas buoys, 16 automatic whistling buoys, 47 bell buoys, 5 submarine bells attached to buoys, 203 iron and steel and 1,100 spar buoys, 15 day beacons, 2 humane establishments and 2 government steamers.

The following new aids to navigation have been established: A range fixed light at Spry bay, a bell buoy off Mutton head, 3 wooden spar buoys at Inhabitants bay and Lorembec harbour, 1 in Sambro harbour and 9 in Lockeport harbour. Seatarie island light was changed from catoptric to dioptric and from oil to petroleum vapour and St. Mary bay light was changed from fixed red to occulting white.

Repairs of different extents and kinds are being made to 25 lightstations, 42 automatic gas and signal buoys, 22 automatic whistling buoys, 54 bell buoys, 4 submarine bell buoys and 235 conical, can and spar buoys and construction work of different kinds carried out at 38 stations.

8 GEORGE V, A. 1918

DOMINION STEAMERS.

Lady Laurier.

The *Lady Laurier* was placing important buoys on the western shores during the month of April, was placing eastern shore buoys, taking supplies to light-ship No. 15, and placing Magdalen island and P. E. Island buoys in May. She continued operations until December, when she was laid up for repairs.

She was lifting buoys, delivering supplies and doing other work until the close of the fiscal year.

Aranmore.

The *Aranmore* was taking passengers and supplies to Sable island, changing buoys at entrance to Halifax harbour, delivering supplies and placing buoys on eastern coast, was changing buoys and taking supplies to lightstations on the western shore from the 1st April until the 1st July, when she sailed on a trip to Sable island, cape Race, cape Freels, Newfoundland, and called at St. Paul and Guion islands, when returning. After taking supplies on board, she continued delivering supplies until November, she was employed at cable work between Sambro island and the mainland, then continued buoy work until February, 1917, when she was laid up for repairs at Halifax, where she remained for the remainder of the fiscal year.

SYDNEY, N.S., SUB-AGENCY.

The marine hospitals at Sydney and at Louisburg have been repaired and supplies of various kinds purchased. Lighthouses were repaired and otherwise looked after when necessary. Public wharves were looked after, investigations made and reports forwarded to the head agency. Machinery and unnecessary materials were sold. The Dominion Coal Company's erecting plant was examined and a report made to the department. A permanent storm signal mast was erected at Victoria park, submerged wrecks were removed from the harbours of Sydney and North Sydney and Ingonish, by the owners, under the agent's supervision. Dominion steamers have been repaired and supplied when necessary. Harbour buoys have been looked after and other matters of importance dealt with as occasion demanded.

PICTOR, N.S., SUB-AGENCY.

In the latter part of November, buoys on the outer reefs went adrift, but were recovered and replaced by the steamer *Hiawatha*. The *Brant* was three days removing outer buoys and replacing them with spar buoys. Stores were delivered to Caribou lighthouse, by the *Hiawatha* and *Stanley*.

QUEBEC AGENCY.

There are 47 wharves under the control of Quebec agency, but few of those bringing much revenue, the net amount being \$6,248.05. New hand foghorns were placed at Anse-à-l'Eau, Baie St. Paul, Little Natashkwan and Thunder river, and a diaphone at cape Salmon.

The number of lights maintained is 146 dioptric, 20 pressed lenses, 89 catoptric group ranges, including hyperbolic, a total of 212 lights. The fog alarms consist of 21 compressed air and steam, 27 hand horns and bells, 5 lightships and 6 cotton-powder bombs, a total of 59.

SESSIONAL PAPER No. 21

The gas and other buoys maintained by government steamers are 111, consisting of 67 gas, 2 submarine, 15 can, 17 conical and 10 winter spar buoys.

The number of buoys maintained by contractors for the department is 321, consisting of 226 can, conical, spar and cask and 95 pickets and stakes. There are 27 beacons—15 pairs and 12 single.

The total amount expended by this Agency for all branches of the services under its supervision was \$798,990.71.

DOMINION STEAMERS.

Montcalm.

The *Montcalm*, at the beginning of the fiscal year, was assisting the *Lady Grey* to open channel between Quebec and Montreal, returned to Quebec on the 23rd of April, was employed below Quebec in the buoy service, was afterwards put in dry dock for repairs; and on the 13th of July sailed on an inspection and supply trip in the straits of Belle Isle, Anticosti, North shore of river St. Lawrence, Newfoundland, Magdalen island coasts, and returned on the 18th of August. While on this cruise she rendered valuable services to the *Fremona*, which was ashore near South point, Anticosti. On the 6th September, the *Montcalm* sailed on a supply and inspection cruise along the north shore of the St. Lawrence, Gaspé coast, bay Chaleur, rendered assistance to the steamer *Kalibia*, ashore at St. Martins, and returned to Quebec on the 29th. She sailed again to the same stations, with supplies, on the 20th of October, returned on the 6th of November, sailed for North Sydney on 16th November for coal, took some militia men aboard, did some construction work and reached Quebec on the 26th of November. She was then put on the buoy service, picking up buoys before the closing of navigation, and afterwards was transferred to the Ship channel, to be used in breaking ice above Quebec during winter.

Druid.

The *Druid* is employed in the buoy service from Platon to Father point—a distance of 185 miles. She was regularly used in keeping buoys in position, attending gas and other buoys, towing lightships to and from stations, delivering supplies and transporting workmen.

On the 2nd of April the *Druid* began to prepare for the spring work, and placed the river buoys until the 29th, sailed for Matane, Manikouagan and Fame point, placed buoys there and completed putting the Saguenay river lights in order on the 10th of May. She continued work until the latter end of November, was then put out of commission for four days for repairs to tail shaft, was replaced by the *Montcalm*, and went into winter quarters on the 23rd of December.

Captain Gagnon died on the 9th March, and was replaced by Captain Pelletier of the *Montcalm*.

Eureka.

The *Eureka* is under command of Capt. A. P. Ross, carries a crew of 20 men, and is employed in the Pilotage service at Father point. She sailed for Father point the 4th May, was constantly employed in embarking and disembarking pilots with much success, returned to Quebec on the 21st December, and was laid up in Louise basin where she was overhauled and repaired.

Rouville.

The *Rouville* arrived from Dartmouth, N.S., on the 18th June, left on the 19th July on a trip along the north shore of the river St. Lawrence, Anticosti island, Gaspé

8 GEORGE V, A. 1918

coasts, in connection with construction work, and replaced the *Eureka* on the pilotage station at Father point during the month of August. On the 1st September she left Quebec for cape Bauld and other strait stations in connection with construction work, made another short trip beginning on the 26th, went on a construction trip on the 8th November, returned on the 21st, was on the "Gridiron" from the 31st October to the 3rd November, replaced the *Champlain* on the 23rd November while that ship was under repairs; and returned to Quebec where she underwent repairs in the Louise basin.

Champlain.

This icebreaker was employed the year round in the ferry service between Murray Bay, cap-à-l'Aigle and St. Irénée, on the north shore of the St. Lawrence, and rivière Ouelle on the south shore, which is connected by a branch line of railway, 6 miles long, with the main line of the Canadian Government railway at rivière Ouelle junction.

She made two round trips daily (except Sunday, when she made one round trip), from June 17 to September 12. Besides this she made four special trips. At other times she made one round trip daily when not prevented by ice or snowstorms, a total of 342 round trips, besides three trips to Baie St. Paul and one to St. Siméon.

She missed one trip in November and eleven in December, made only three trips in January, three in February and twenty in March, owing to snow and ice; transported 9,119 passengers, 2,488,889 pounds of freight, 6,937 bags of mail matter, weighing 119,243 pounds, and provided 1,594 meals to passengers and earned \$8,839.35.

She was under repairs at Quebec from May 22 to June 16, and was replaced by the *Lady Evelyn*, and again from November 24 to December 21, when she was replaced by the *Bourville*.

MONTREAL AGENCY.

Many repairs were made during the season. Batiscan beacon and Berthierville Channel beacon were repaired and six beacons were erected, Cape Madeleine Village light was raised, Church point beacon light rebuilt, Cascades range lights were built by contract, day beacons were erected at Chute à Blondeau, in range with lights, lighting apparatus was placed at Daigneault range, a small dwelling was erected at Dixie's back rango for the keeper, a freight-house was built on Victoria pier and a telephone installed, filling a long-felt want at the agency. A lantern-house was built at ile Ronde, a Ham traction headlight and a small cabin were erected at ile Gros Bois range, three lights which formed two ranges completing the lighting of the steamboat channel were erected at ile aux Sables. Portneuf range lights were repaired and painted. New apparatus was placed on Repentigny point lighthouse and St. Placide lighthouse. Besides these repairs scows and lighters were repaired and painted.

Expenditure.

The expenditures are as follows:—

Rents, salaries and contingencies..	\$ 13,718 67
Construction of lights..	29,314 35
Dominion steamers..	65,129 60
Construction buoy service..	4,527 86
Maintenance..	30,699 21
Maintenance of lights....	17,539 52
Lightkeeper's salaries..	33,614 10
Maintenance and repairs of wharves..	1,394 94
	<u>\$195,948 25</u>

This is \$27,624.94 less than last year's expenditure.

SESSIONAL PAPER No. 21

DOMINION STEAMERS.

Reserve.

The *Reserve* was employed during the year in the buoy, construction and maintenance of lights services, supplied nearly all the lights from Montreal to Portneuf, besides towing the tug *Acetylene* from station to station, when required, and was repaired at the shipyard at the cost of \$735.28.

Tug Marguerite.

This small gasoline tug was steadily employed during the season in all parts of the district; and owing to her light draught, great power and speed, is most economical and convenient.

She was employed in the lighthouse and buoy service in the Rideau river and other waters. She had repairs made to hull and engine, costing \$254.25.

Dollard.

This vessel was employed only a short time by this agency, while laying and raising buoys. After placing the buoys in position in the spring she was transferred to the construction department for the summer and was again transferred to the St. John agency in the fall.

Maggie May.

The *Maggie May* is a chartered tug used in conjunction with the derrick-scow *Lenore*, and was steadily employed throughout the season on the buoy work on the Ottawa river and lake St. Louis, besides making her annual trip through the Rideau river and lakes district; putting lights and floats in good order, doing small construction and repair work jobs and delivering supplies on the Ottawa river and lake St. Louis.

Shamrock.

This vessel was employed in the buoy service throughout the season and gave very good satisfaction.

Vercheres.

The *Vercheres* was employed throughout the season on different construction works on the St. Lawrence river, and when necessary in conjunction with the scow *Acetylene* for the landing of gas-buoys on lake St. Louis and for inspection purposes. Near the close of the season her hull was so badly injured, by ice near Three Rivers, that she had to be beached; but in a few hours she was floated and sailed to Sorel for repairs.

Acetylene.

This scow is employed in painting and repairing lights and on buoy service.

Argenteuil.

The *Argenteuil* is a composite single-screw vessel built at Sorel Government shipyard in 1916-17, and is 100 feet long, 21 feet wide, and 8-foot beam. She is fitted with a 4½ fore-and-aft compound engine, 12 and 16 inches diameter, by 18-inch stroke, with working pressure of 130 pounds and operated by a cylindrical Scotch boiler. When completed she will be used in the lighthouse and buoy service on the Ottawa river and other shallow waters.

8 GEORGE V, A. 1918

DOMINION LIGHTHOUSE DEPOT, PRESCOTT.

There are 35 gas buoys in this district, lighted 7,931 days in all, and consuming 55,400 pounds of carbide. Besides the gas buoys, there are 169 spars, 11 cans, 1 bell and 3 beacons, all placed, lifted and repaired by the depot officers and men. Besides the carbide, 10,396 pounds of Blaugas was consumed.

A detailed list of work done in the different departments is given. Two hundred and sixty production orders were completed, covering a great variety of work. All the lighting apparatus was carefully tested, clock submitted to time tests, reflectors tried, lamps put in good order and new lights placed where necessary. Buildings, steamers and buoys were repaired and painted.

The blacksmith shop was kept busy making or mending shackles, bands, chains, bolts, nuts and all iron requirements in connection with the depot. The brass foundry made castings, for machine shops, clocks and lights. The shipyard was overhauled and put in good order, 25 spar buoys were painted, and 8 fog alarm tanks; 2,500 concrete blocks were made and 5 Fairbanks engines unloaded. Two oil tanks were scraped and painted and 36 wooden markers were prepared for Prescott division. Air compressors were unloaded, the *Scout* supplied with coal; all can and conical buoys cleaned and painted.

The pattern-shop made patterns for fog-signalling apparatus, large patterns for third-order apparatus and all other patterns required in machine shops.

The gas testroom rendered good service in testing and overhauling lanterns. The photometric gallery department carried out many improvements in the Diamond burners, whereby the greatest possible degree of light is furnished with the least possible quantity of oil. Oils for fuel and lights, as well as reflectors and lanterns were tested and reports made of results, besides many other tests—all tending to the efficiency of the service.

The sales from the depot amounted to \$99,170.57, and the earnings \$12,728.42, amounting in all to \$111,898.99.

DOMINION STEAMERS.

Grenville.

The *Grenville*, after being repaired and outfitted, went into commission on the 10th April, 1916, laid a gas and bell-buoy at Niagara, and nearly all the gas and spar buoys on the St. Lawrence river, west of Prescott and in the bay of Quinte; painted all the gas and spar buoys, lighthouses and beacons, and charged gas buoys as often as required; removed all gas buoys and replaced them with spars at the close of navigation. She delivered all the supplies to stations from Prescott to Presqu'île, and to lighthouses in lake Ontario belonging to the Prescott district; assisted in building Burnt Island lighthouse; repairing Brighton Range pier, Nigger Island light, Wolf Island dwelling-house, and building a new pier around the fog alarm plant at Main Duck island. After taking the lightkeeper from Main Duck island, on December 29, 1916, the *Grenville* sailed to Kingston, where she went out of commission during the winter season.

Scout.

After undergoing general repairs, the *Scout* went into commission on the 6th April, 1916, laid some buoys west of Prescott and all the buoys between Prescott and Valhardsfield; attended all the gas and spar buoys, painted, charged and looked after the maintenance of all unattended lights and beacons in the division east of Prescott; the inspecting and recharging of gas buoys during season of navigation and substituting

SESSIONAL PAPER No. 21

spar-buoys for them at the close of navigation. She delivered lighthouse supplies, assisted in the placing of new buoys and beacons in the new Canadian channel, between Brockville and Kingston, assisted in repairing Cole Shoal, Knap Point lighthouse and Gananoque Narrows lighthouse, Summertown wharf, and McKie point lighthouse.

She was placed in Davis dry dock, Kingston, for repairs on the 19th December, 1916. ..

PARRY SOUND AGENCY.

The two steamers—the *Simcoe* and the *Lambton*—have been overhauled and fully equipped and the gas buoys painted and otherwise made ready for service. Five additional spar buoys have been provided—3 at Killarney and 2 in the Byng Inlet channel. The number of buoys now maintained by this agency is 15 gas, 3 iron unlighted, and 115 wooden spar buoys.

Repairs have been made to Burk Falls wharf shed, Thornbury light tower was moved and made safe for winter, Three-Mile point, Depot island, Killbear Point, Carling Rock, Spruce Shoal and Silver Rock lights were fitted with Aga-gas light; and after the close of navigation, buoys, moorings and lanterns were overhauled and made ready for next season's work.

DOMINION STEAMERS.

Simcoe.

The *Simcoe* was engaged in placing buoys until the 19th May, was delivering coal for fog-alarm stations in Georgian bay and part of lake Huron until the 16th June when she was put under the control of the Superintendent of Lights. All the supplies for lightstations, from Port Colborne to Fort William having been put on board in separate packages, the *Simcoe* sailed from Port Colborne on the 16th June, supplied all the stations to Fort William and returned to Parry Sound at the end of August. She was used in repair work until December, when she resumed the buoy work before the close of navigation, and was then laid up at Parry Sound.

Lambton.

The *Lambton* was employed by the agency, when not in use by the Chief Engineer's branch.

VICTORIA, B.C., AGENCY.

The new wharf enables the department to dispense with the use of the Hudson Bay Company's and the Public Works' wharves and furnishes ample room for departmental stores and steamers.

Workshops have been built, where lanterns and other mechanical aids to navigation are repaired and tested; and when all the required machinery will have been installed, great saving in time and money will be affected.

At Prince Rupert sub-agency, considerable repairs have been made to wharves, yards, buildings and machinery. Aga-gas beacons were substituted at White rock, Pointer rock, Surf island, Copper island, Low island, Danger rock, Ogden point, with one in course of completion at Car point.

Automatic gas beacons were erected at Drew harbour, Richards point, Pirate point, and Wearing point. The total number of automatic beacons in use in British Columbia waters is 51 in use and 2 spare beacons.

Twenty-four compressed air diaphones, twelve automatic fog-bells, eight hand fog-horns, and 88 lighthouses are in operation. The 9½-type automatic lighting and

8 GEORGE V, A. 1918

whistling buoys on the Channel rock and San Juan stations and five $8\frac{1}{2}$ automatic gas buoys have been changed to the Aga system. There are now 18 stations lighted by acetylene gas buoys.

At the end of the fiscal year, 28 can, 23 conical, 29 platform, and 116 spar buoys were in use in the coastal waters and 92 in the inland waters of British Columbia.

DOMINION STEAMERS.

Estevan.

The *Estevan* sailed from Victoria on the 15th of April for Nanaimo, took on board materials and stores salvaged from the *Quadra*, and after charging beacons, supplying lightstations, overhauling, painting and resetting buoys and beacons in straits of Georgia, returned to Victoria; and after taking a full load of supplies on board, sailed again on the 24th, overhauled Joan Rock buoy, supplied East Point lighthouse, overhauled Rosenfelt can buoy, Sandhead buoy, landed supplies at the lightship, attended to various buoys and beacons in the straits of Georgia, returned and sailed on the 9th of May for the west coast, where she worked until June; and on the 5th, sailed to Queen Charlotte island, landed supplies, substituted Aga gas for the acetylene automatic system at Copper island, Low island and Danger rock, erected three concrete beacons in Skidgate inlet, installed an aerial tramway at Langara, charged gas buoys, landed construction supplies at Ballenas island, installed a conical buoy at Cape Mudge reef, returned, took on supplies and again departed on the 17th August to land supplies between Race rock and cape Beale, and substitute Agas gas for the acetylene automatic buoys at San Juan and Channel rocks. After placing a superstructure containing a bell on the Clo-Oose submarine bell, charging San Jose beacon, establishing an automatic beacon on Swale rock, Barkley sound, and landing supplies for the Naval department and telegraph service, went in the Victoria Machinery Depot dock for repairs on the 6th of September, where she remained until the 29th of September, 1916. She continued the lighthouse and buoy service on the west coast, left on the 15th of January, when she sailed with gasoline and distillate for the radio-telegraph service, machinery and supplies for several stations, and on the 14th of February sailed from Victoria with the San Juan buoy. While there she dragged for and recovered the sunken Aga gas buoy, and on the 27th of March went out of commission to be repaired, cleaned and painted.

Newington.

The *Newington* was in dock, undergoing repairs, during April and the first part of May; and from the 15th of May until the 15th of June, was employed in overhauling unlighted buoys and painting beacons, between Victoria and Boat harbour. She delivered supplies to lighthouse and fog-alarm stations in the straits of Georgia, overhauled day beacons from Cape Mudge to Ripple shoal, and placed new buoys, from the 15th of June until the 3rd of July, when she began recharging Green Point Rapid beacon, landed materials for the repair of Yellow island station construction, machinery and materials at Ballenas island lighthouse, placed a platform buoy at Darcy island for the quarantine steamer, *Mudge*, repaired Enterprise Reef beacon and two buoys in Nanaimo harbour. She returned on the 26th of July, "blew down" and cleaned boilers, loaded bungs, anchors and other materials and supplies, overhauled buoys and looked after other aids to navigation until the 22nd of August, when she proceeded to Friday harbour, recovered a derelict can buoy, erected a 31-day lamp, landed the Superintendent of Lights at Saturna island and at the Sand Head lightship. On the 12th of September she sailed to recharge the gas beacons between Victoria

SESSIONAL PAPER No. 21

and Seymour narrows and did other ordinary work until the 13th of October, when she sailed for cape Mudge, having the Fog-alarm Inspector on board, who inspected and repaired the machinery of all fog alarms which he found defective.

The *Newington* sailed again on the 26th, with supplies and the Fog-alarm Erector, on an inspection tour; and on the 13th of November towed the schooners *Oregon* and *Leonor* to a safe berth in the upper part of Victoria harbour. Taking the Inspector of Lights on board, she sailed to Triangle island on the 13th of November, charging gas buoys and landing supplies at several stations en route; and on the 3rd of January sailed for Nanaimo, landing supplies and attending to buoys, beacons and other aids to navigation on the way.

On February 6th the *Newington* left Vancouver to start the annual overhaul of unlighted buoys in the gulf of Georgia and approaches, returned with a load of sand for the use of the agency and departed on the 14th of March to recharge beacons between Nanaimo and Victoria, in which work she continued until the close of the fiscal year.

Leebro.

The chartered steamer *Leebro* left Victoria on April 3rd, 1916, charged San Jose gas buoy, landed gasoline at Bantfield, overhauled the submarine bell-buoy at Clo-Oose; sailed to Esquimalt on the 27th, overhauled aids to navigation there, loaded carbide for buoys and beacons, sailed to Prince Rupert, recharged all acetylene beacons on Helmecken island, Johnston straits and Alaskan boundary, changed the characteristics of beacons to conform with the latest pattern of buoys, erected new buoys in Observatory inlet at Lizard and Richard point, and installed an 'Aga light at the "Pointers," landed supplies at Pine, Egg and Green islands, landed fuel for fog-alarm stations from Prince Rupert to Queen Charlotte island; and on the 4th of August, landed district engineer and workmen and construction materials at Ballenas island, landed supplies at different points and overhauled the spar buoys on the north shore of Georgia bay.

The *Leebro* left on the 22nd of August, loaded with supplies, attended to aids to navigation; and on the 29th of September left with rails and other construction materials for the railroad between Estevan point and Home harbour. From November 21st to March 23rd the *Leebro* was employed in the ordinary lighthouse and buoy service, and on that date left with construction materials for Ivory island and Egg island; she landed supplies and workmen at Triangle island for the radio-telegraph service, thus concluding the year's work.

APPENDIX No. 13.

HARBOUR COMMISSIONERS' REPORTS OF MONTREAL, QUEBEC, TORONTO, VANCOUVER, THREE RIVERS, BELLEVILLE AND PICTOU.

The reports of the Harbour Commissioners of Montreal and Quebec are synopses of the original reports which are published in pamphlet form for general distribution.

MONTREAL HARBOUR COMMISSION.

BOARD.

The personnel of the Montreal Harbour Commissioners Board for the year 1916 was the same as that for 1915, viz.: President, W. G. Ross, Esq., Farquhar Robertson, Esq., and A. E. Labelle, Esq.; Secretary-treasurer, Major David Seath; Chief Engineer, F. W. Cowie, Esq., M. Inst., C.E.

INCREASED TRAFFIC.

The remarkable growth of the traffic of the harbour of Montreal in the twenty-five years, from 1891 to 1916, may perhaps be best illustrated by a comparison with that of the port of Glasgow for the same period.

Glasgow.—Total receipts on revenue account, 1891, £354,580 (\$1,772,900). Total receipts on revenue account, 1916, £705,976 (\$3,529,880). Receipts about doubled in twenty-five years.

Montreal.—Total receipts on revenue account, 1891, \$263,965. Total receipts on revenue account, 1916, \$1,813,872. Increase in twenty-five years, nearly seven fold.

SEASON OF NAVIGATION, 1916.

The harbour was free of ice on April 20, the water being exceptionally high. The first arrivals from lower river port were the *Gaspesian* and the *Lady Grey* on April 24. First vessel to arrive from sea was the *Bayern*, Captain C. Dominico, on May 1. The close of the season was marked by two weeks of fine, mild, and clear weather. The last vessel to depart for sea was the *Ranney* on the 11th December.

SHIPPING.

Statement showing the number, nationalities, and tonnage of sea-going vessels arriving in port during the season of 1916, navigated by 41,440 seamen:—

Nationality.	No. of Vessels	Tonnage
British.....	653	2,020,240
Italian.....	22	32,722
Norwegian.....	17	22,914
American.....	18	19,772
Danish.....	3	4,642
French.....	1	1,307
Total.....	688	2,134,456

Of the above, 665 were of iron or steel; tonnage, 2,130,535; and 33 of wood; tonnage, 3,921.

Of the total of sea-going vessels, 569 were transatlantic, totalling 1,965,161 tons; and 129 from the Maritime Provinces, tonnage 169,295.

The number of inland vessels that arrived in port during the season was 7,297, tonnage 3,558,572.

Grand total, 7,995 vessels; tonnage, 5,693,328.

SESSIONAL PAPER No. 21

POLICE DEPARTMENT.

The harbour police force was organized in 1913 and consists of 3 officers and 42 men, uniformed and armed, who maintain order, protect life and property, and regulate traffic in that portion of the harbour of Montreal between the Lachine canal and Sutherland pier, a distance of $3\frac{1}{2}$ miles. Their services are also frequently requisitioned by the various shipping companies during the season.

RAILWAY TRAFFIC DEPARTMENT.

During the year 1916, 234,439 cars were handled, as compared with 157,480 in 1915, an increase of 76,959 cars, by far the largest yearly increase in the history of the traffic. Over 30,000 cars of grain were handled in connection with the harbour elevators. Directly to and from the sheds, 51,576 cars were handled as compared with 43,096 in 1915. The necessary repairs to railway plant and equipment were effected in the commissioners' shops and locomotives altered to suit the necessities of transportation over an increased territory. A scheme for the electrification of the harbour railway terminals is still under consideration, but the commissioners taking the existing conditions into account, have decided to postpone the carrying out of this project until after the war.

The tracks of the Harbour Commissioners railway extend from the Victoria bridge to the outlet of the Lachine canal, and from McGill street to Longue pointe; the total mileage in 1915 was 44.92, and at the close of the season of 1916, 49.11 miles.

The main section of the harbour terminals lies between the foot of McGill street and the C. P. R., Place Viger terminals, and in this section are seventeen of the most important transit sheds in the harbour and the two Harbour Commissioners' grain elevators.

The business includes: (1) shunting to and from steamship berths in connection with the business of the railway company, (2) switching between the various railway companies, (3) handling freight between different points in the harbour, (4) local loading and delivery sidings, (5) switching for industries connected with the harbour railway.

MONTREAL WATER LEVEL COMMISSION.

A board of commissioners appointed on June 12, 1915, consisting of Mr. Eugene Haskell, Dean of the College of Civil Engineering, Cornell University, Mr. W. J. Stewart, Chief Hydrographer Department of the Naval Service, and Mr. F. W. Cowie, Chief Engineer, Harbour Commissioners of Montreal, carried on investigation during the season with a view of making a comprehensive report on the following matters relating to the navigation of the River St. Lawrence ship channel and Montreal harbour viz.:—Effect of past dredging in the ship channel; effect of past dredging in St. Mary current; effect of past dredging in the St. Lawrence river on the water level of the harbour; probable effect of the dredging now being done south of St. Helen island; probable effect of the proposed dredging in Montreal harbour; probable effect of any extension of the guard pier; probable effect of any increased diversion of water from the valley of the St. Lawrence and Great Lakes; probable effect of storage dams in the Ottawa river; the board may also make suggestions to lessen trouble from ice.

ENGINEERING DEPARTMENT.

The work of the engineering department comprises harbour construction, maintenance, and operation. The growth of the harbour, and the effort to keep pace with

8 GEORGE V, A. 1918

the increasing commerce have resulted in the commission's acquiring a splendid construction plant, including dredging plant, tugs, derricks, and a shop for repairs, all being kept up to date and in first class working order.

The work carried on under the heads already given was as follows for the season of 1916:

The improvement and extension of harbour railway terminals.

The continuation of the construction of new Victoria pier and Market basin.

The continuation of the construction of bulkhead high-level wharves on the river front, eastwards from Victoria pier.

General dredging for widening and deepening of basin and berths.

Dredging of channel for the amelioration of St. Mary current.

Paving and laying railway tracks on wharves.

The continuation, to completion, of improvements resulting in the floating dock basin and site for the Canadian Vickers' shipbuilding and repair yard.

The construction and improvement of harbour facilities, such as hoists, flood gates, bridges, subways and freight yards.

Additions and improvements to Harbour Commissioners' construction plant.

The completion of a second industrial wharf at Pointe-aux-Trembles.

The construction of a market wharf for Montreal East.

The completion of the construction of the west extension to grain elevator No. 1.

The acquisition of operating and railway plant.

Erection of a new office; additional chutes for bagging and new standpipe at elevator No. 1.

Erection of new offices in shed No. 7 for the better accommodation of the lessees.

Erection of coal bin, storage tank and sand dryer at locomotive shops.

Installation of an additional quick-acting flood-gate near the end of King Edward pier.

The maintenance of berths and channels, of wharves, sheds, buildings, roadways, water service, cleaning of wharves and general repairs were carried on as usual.

The operating of harbour facilities such as plant for the storage and handling of grain, electric lighting and power services.

Operating the floating crane, electric hoists, and the construction and maintenance of industrial connections with the harbour were all carried on during the season with an even greater measure of success than usual.

GRAIN ELEVATOR SYSTEM.

The operation of the system for 1916 was marked by a change in the bulk of the grain receipts from marine to car delivery, and extensive operations for the shipping of oats in bags. Whereas in 1914, only 13 per cent of the grain received at the Harbour Commissioners' elevator arrived by car, the proportion in 1916 was 75 per cent.

The number of cars of grain received during the season was 23,250, and 7,400 cars were loaded and shipped. The total number of bushels of grain handled by the harbour commissioners' elevator system during 1916 was 51,548,720, as against 37,317,367 in 1915.

FINANCIAL STATEMENT.

Receipts on revenue account amounted to \$1,513,872.94 for the year ended 31st December, 1916, an increase of \$432,254.16 over the previous year.

The cost of operation, maintenance, interest, etc., was \$1,770,382.67, leaving a balance to the credit of revenue account of \$36,490.27.

Disbursement on capital account amounted to \$799,346.80. A loan of \$1,237,918.31 was received from the Dominion Government on account of capital expenditure on improvement work.

SESSIONAL PAPER No. 21

GENERAL.

On September 27, 1916, in presence of a large and distinguished company, H.R.H. the Duke of Connaught officially opened the new Victoria pier.

Between the dates September 13 and September 15 inclusive, the American Association of Port Authorities met in Montreal, and held their meetings in the board room of the harbour commissioners' office.

On October 27, the Dominions Royal Commission Board, in session in Montreal to take evidence upon the natural resources of Canada and their development, made an inspection of the harbour.

QUEBEC HARBOUR COMMISSION.

APPOINTMENT OF NEW BOARD.

On the resignation of Sir Wm. Price, president, and Messrs. A. S. Gravel and J. B. Letellier, commissioners, Mr. D. O. Lesperance of Quebec has been appointed president of the Quebec Harbour Commission, and Messrs. A. S. Gravel, of Etchemin and D. H. Pennington of Quebec Commissioners.

Mr. Charles Smith, K.C., of Quebec, has been appointed secretary-treasurer of the Quebec Harbour Commission.

The new commissioners took the oath of office on June 26, 1916, and held their first meeting on the same day.

CHIEF ENGINEER'S REPORT.

The work of the quay wall on river St. Charles has been finished with the exception of 1,200 lineal feet of superstructure still to be built up to a height of 5 feet. Fenders and mooring posts have to be placed on the unfinished part of the frontage and the surface part of the quay has to be planked for a length of 2,850 feet.

Dredging of the basin and approach to the new quay wall to a depth of 35 feet l.w. has been completed, permitting use of the entire frontage, and 19 acres have been added to the surface area of the Louise embankment.

Plans are being prepared for erection on the new quay front of two fireproof landing sheds, one 1,000 feet by 104 feet, and the other 755 feet by 75 feet, in connection with these sheds "four-belt" grain galleries connect with the commissioners' elevator.

Considerable progress has been made in the construction of the 1,000 feet long shed and the grain galleries and the whole of the work will be completed next summer.

At Indian cove no new construction work was carried on, but some necessary repairs were made.

The Sillery quarry was not worked to full capacity during the past season, only 5,959 cubic yards of stone having been taken out.

The floating grain elevator handled during the past season 108,068 bushels of grain.

Grain elevator No. 2 received 2,075,678 bushels and delivered 1,899,264 bushels of grain, of which 310,760 bushels were bagged in the elevator.

The 50-ton crane was returned by the Naval Department on June 3 last, since which date it has handled 10,450 tons of material into and out of vessels.

The following changes have been made in the commissioners' plant; tug and service boat *Laval* replaced by tug *Diver* and service boat *Courcelette*. Two gap lathes have been added to the plant as well as a cement gun and a Gantry crane.

8 GEORGE V, A. 1918

WHARFINGERS' REPORT.

The traffic making use of St. Charles docks and wharves during the season of 1916 was as follows: Inwards, 278 vessels, 737,328 tons register; outwards, 194 vessels, 637,167 tons register.

Damaged vessels using the dock during the season were the *Arachne* which having grounded at St. Pierre and Miquelon landed cargo grain at elevator No. 2 Louise docks, and went to Levis for repairs SS. *Fremona* having been ashore off south point of Anticosti island landed grain cargo at Louise docks and went to Levis for repairs.

The docks were occupied during the winter months by a large number of vessels of various tonnages.

HARBOUR MASTER'S REPORT.

The record of shipping arrivals for 1916 are as follows:—

	No. of Vessels.	Gross Ton.
Coasting vessels from seawards.. . . .	112	95,614
“ “ Montreal and lake boats.	182	244,990
Ocean steamships inwards.. . . .	151	944,161
“ outwards from Montreal.. .	147	796,493
	592	2,081,158

The unusually large amount of tonnage from Montreal is due to government shipments.

As compared to the season 1915, when the record was 552 ships, tonnage 1,891,813 there is an increase of 40 ships and 189,385 tons.

An agreement between the Quebec Harbour Commissioners and the city of Quebec provides for the supply of water to the Quebec Harbour Commissioners' buildings, immigration buildings, docks, and also to ocean vessels visiting the port, for the sum of \$5,000 per annum, for two years, beginning May 1, 1916.

REVENUE AND EXPENDITURE.

The revenue of the Quebec Harbour Commission for the calendar year 1916 was \$282,327.46, an increase over the preceding year of \$30,454.69; the expenditure for 1916 was \$288,474.38 leaving a deficit of \$6,146.92 in the year's operations.

GENERAL.

During the year 1916 the Quebec Harbour Commissioners have become members of the American Association of Port Authorities. This association, upon invitation of the commissioners, visited the docks and harbour on the 16th November, 1916.

The Dominion Royal Commissioners also visited the harbour on November 6, 1916, and were given all available information concerning the port, its berthing and landing facilities, etc.

TORONTO HARBOUR COMMISSION.

The Toronto Harbour Commissioners.

GENTLEMEN,—I have the honour to submit my annual report for 1916.

The bay was clear of ice on the 3rd April, having been frozen over for 93 days, or 11 days shorter duration than in 1915.

SESSIONAL PAPER No. 21

The first vessel to arrive was the *Dalhousie City*, Captain Maddock, with passengers and cargo from Port Dalhousie, on the 4th April. The last vessel to arrive was the *Macassa*, Captain Henderson, with cargo from Hamilton, on the 22nd December. She is wintering here.

The highest water, as recorded on the commissioner's gauge, was 39½ inches above zero on the 30th June.

The lowest water was 5 below zero on the 2nd January.

The average for the year was 17.1 above zero, or 6 inches below last year.

The quantity of coal imported by vessel is as follows, viz:—

	Tons.
Anthracite coal..	69,720
Bituminous and screenings..	43,557
	<hr/> 113,277

The total quantity of coal imported into Toronto by rail and vessel as per returns from Ottawa is as follows, viz:—

	Tons.
Anthracite coal..	909,024
Bituminous and screenings..	1,101,341
	<hr/> 2,010,365

Buoys.—The can buoys were placed round the Lighthouse point on the 29th April, and taken in on December 14. Harbour buoys were placed between Spadina and Bathurst streets on August 1, in connection with the harbour improvement plans, and were brought in on December 14.

Buoys were placed by instructions from the Harbour Board at the Long Branch rifle ranges on the 17th July, to mark the danger zone. All expenses connected with this work have been charged to the Department of Militia and Defence at Ottawa. These buoys were brought in on November 16.

Under instructions, twenty-five displacement buoys were placed off the exhibition sea wall on August 26, to mark the mined area, and were taken up September 19. All charges connected with this work have been defrayed by this department.

The gas buoys formerly used to mark the intake pipes were not put into position this year on account of safety considerations.

Lights.—Lamps at the Eastern channel were lighted for the first time on the 3rd April, and the lamps at the Western channel on the 1st April; both were discontinued on the 25th December.

During the gale on October 17 to October 20, can buoy No. 8 broke from its mooring at the extreme point of the island; this buoy was replaced on October 21. During the gale of November 22, it again broke loose, and was replaced on November 30.

During the October gale the deputy harbour master's motor-boat foundered and was lost.

The number of vessels arriving at this port this season is as follows, viz:—

	1915. Arrivals.	1916. Tonnage.	1915. Gross.	1916. Gross.	1916. Net.
Prop..	349	377	456,537	355,614	214,909
Steam..	1,890	1,873	2,188,918	2,498,134	1,347,386
Sail..	269	123	37,438	30,461	30,451
	<hr/> 2,508	<hr/> 2,378	<hr/> 2,682,923	<hr/> 2,884,209	<hr/> 1,592,746

8 GEORGE V, A. 1918

Amounts of harbour dues collected during the season are as below, viz.:—

Merchandise..	76,823 tons at 3 Cts.	\$ 2,304 69
Coal..	113,277 " 3 "	3,398 31
Horses, autos, etc..	1,020 " 10 "	102 00
	10,019 toises at 5 "	500 95
Fruit, Bbls..	4,930 }	
Bags..	13,194 }	
Crates..	629 }	
Baskets..	598,937 }	
		651 28
		<hr/> \$ 6,957 23
Total amount of harbour dues collected..		\$ 6,957 23
Amount of collection on account of storage..		1,108 70
Amount collected for berthing vessels..		642 93
		<hr/>
Totals collected by Harbour Masters' Department..		\$ 8,708 86

The number of vessels wintering in this port this season is as follows, viz.:—

11 steam barges..	10,574 tons (registered).	
9 passenger steamers..	14,109	"
4 tow barges..	1,519	"
26 steam tugs..	1,672	"
11 steam ferries..	2,554	"
Dredges, derricks, scows, etc..	1,600	"
Pleasure yachts..	600	"
	<hr/>	
Total..	47,028	"

The following is the report from Sir Frederick Stupart, Director of the Toronto Observatory, viz.:—

The first warning of the season for Toronto was issued on the 21st April, and the last on the 6th December.

Cautionary signals were displayed on ten occasions, and storm signals on four occasions.

The heaviest general gale of the season was experienced on the 22nd November, when the wind guage at the Eastern gap recorded west 50 miles per hour. This gale was very successfully warned.

There were also fresh to heavy gales on the 9th May—cautionary signals were only displayed.

Cautionary signals ordered on the 21st April, 20th September, and 13th November were not justified by subsequent moderate gales.

The remainder issued were verified.

The season throughout was exceptionally free from stormy weather. From June 6 until late in October there were no gales, while in November only two storms were experienced and only one of these was heavy. This is quite exceptional for November.

The precipitation for the year is as follows, viz.:—

	Inches
Rain..	25.27
Snow reduced to water..	6.72
	<hr/>
	32.00

In conclusion, I may say I have every reason to be satisfied with Deputy Harbour Master John M. Allen and my assistant, Walter T. Massie, whose zeal in the Commissioners' interest deserves all commendation.

I am, gentlemen, your obedient servant,

COLIN W. POSTLETHWAITE,

Harbour Master.

SESSIONAL PAPER No. 21

JOHN LEE, Esq.,

Secretary, Harbour Commissioners,
Toronto, Ont.

DEAR SIR,—As per your request I herewith give you the changes that will take place in Toronto waters, for season 1917:—

Placed buoys off Gibraltar point for the future will bear as follows:—

One Spar Buoy painted red, Gibraltar Light bears, S. 62 degrees E.

Can Buoy No. 8. Gibraltar Light bears, N.73 degrees E.

"	"	6	"	"	N.25	"	E.
---	---	---	---	---	------	---	----

"	"	4	"	"	N.22	"	W.
---	---	---	---	---	------	---	----

"	"	2	"	"	N.50	"	W.
---	---	---	---	---	------	---	----

Mr. William P. Anderson, Chief Engineer, Department of Marine, Ottawa, has been given the above information and same will be marked on the new official chart, for the Great Lakes, now under way. This information was sent to the above Engineer on January 17, 1917.

Yours very truly,

J. M. ALLEN.

Deputy Harbour Master.

VANCOUVER HARBOUR COMMISSION.

To the Hon. J. D. HAZEN, K.C.,

Minister of Marine and Fisheries,
Ottawa, Ont.

SIR,—In compliance with section 36, chapter 54, 3-4 George V, the Harbour Commissioners herewith respectfully submit a report for the year ending 31st March, 1917, including a statement of all monies received and disbursed.

The year just closed will be memorable as marking the inauguration of two undertakings which are calculated to have a far-reaching and beneficial effect when the policies of which they are expressions will have developed in larger proportions.

INDUSTRIAL SITES.

The first of the undertakings referred to is the provision of industrial sites on Granville island. When reporting to you last year, the reclamation of this area of about forty acres, then known as Granville Street mud flats, was within a few months of completion. Since then the work of carrying out improvements necessary to fit the island for actual occupation by industries has proceeded steadily; and in a few weeks a sewerage and water system, trackage and roads will be completed. The policy of the commissioners in this undertaking is to furnish, at low rentals on long-term leases, sites with every convenience with a view of attracting industries to the district.

The rentals to be charged for sites are computed at the rate of:—

\$1,500 per acre per annum with 20-ft water channel and trackage.

\$1,000 per acre per annum with 12-ft water channel and trackage.

\$ 800 per acre per annum with trackage only.

and it is gratifying to be able to state that industrial plants are already under construction on the island.

8 GEORGE V, A. 1918

GOVERNMENT WHARF.

The other undertaking referred to in the foregoing is the government wharf. This handsome concrete structure, 800 feet long by 300 feet wide, received its first ship on January 5 last, and between that date and 31st March, 16,124 tons of cargo were handled, almost the whole of which was discharged here for reshipment to United States destinations. The commissioners, considering that the function of public-owned wharves should be to reduce as far as possible the charges on goods passing through the port, for the encouragement of the importer and the benefit of the local consumer, have issued a tariff of rates, approved by Order in Council, in which the rate for wharfage on general merchandise is 50 per cent less than that prevailing heretofore.

On the principle also that facilities for loading and unloading with quick dispatch offer a strong attraction to shipping, arrangements have been made for the provision of such equipment of the most efficient character in the form of dynamic trucks, locomotive crane, etc. Delivery of these appliances has been delayed by war conditions, and it will be probably 1st June before they are in operation but, even without them, the warehouse accommodation has proved insufficient, and when up-to-date facilities are installed the conditions are likely to be such as to make extensive additional shed space an urgent necessity.

The matters referred to in the foregoing paragraphs are the first practical expressions of principles which the commissioners believe to be essential to the sound commercial expansion of the port, namely—the fostering of industries and the public regulation and control of harbour facilities and charges.

In this connection, it is interesting to relate, that the Arbitration Board appointed to determine the value of the Kitsilano Indian reserve which the commissioners are seeking to acquire for terminal and industrial purposes made its award in January last. As the Board's finding has been appealed, however, further progress has been for the present delayed.

From the Customs returns for the year the classification of shipping entered inwards and outwards at this port is as follows:—

Foreign inwards, 1,520 vessels, Tonnage 2,014,859.
Foreign outwards, 1,392 vessels, Tonnage 1,734,629.
Coastwise inwards, 9,493 vessels, Tonnage 3,357,050.
Coastwise outwards, 9,793 vessels, Tonnage 3,629,551.

On all their construction work the commissioners have been employing returned soldiers almost exclusively and their services have been very satisfactory.

F. CARTER COTTON,

President.

JAS. A. FULLERTON,

S. McOLAY,

Commissioners.

SUMMARIZED Statement of Operations for the Year ended 31st March, 1917.

SESSIONAL PAPER No. 21

REVENUE.

	\$	cts.
Harbour dues	30,661	89
Port Warden's fees, maintenance of buoys, etc	4,302	68
Rentals of waterlots, etc	11,478	47
Wharfage and storage	2,790	53
Crown grant	1	00
Interest	45	46
Sundry receipts	1,379	85
Revenue for year	50,639	88
Add—		
Balance—cash in bank and accounts receivable as at 31st March, 1916	4,106	43
Less—Accounts payable as at 31st March, 1916, since paid	363	86
Total revenue	3,742	57
	54,402	45

RECEIPTS ON CAPITAL ACCOUNT.

Issue of 600 debenture bonds at \$500 each, with interest at 5 per cent maturing August, 1921	300,000	00
Total capital	300,000	00
	354,402	45

Vancouver, B.C.,
26th April, 1917.

W. D. HARVIE,
Secretary.

DISBURSEMENTS.

	\$	cts.
Wharf—Structural alterations, additions, etc	9,086	98
Proposed Terminal Scheme—Sundry expenditures	13,876	80
Administration and miscellaneous expenses	20,951	67
Interest on debentures	6,888	70
Disbursements out of revenue	50,804	15
Balance on revenue as at 31st March, 1917—		
Cash in Banks and on hand	5,624	37
Accounts receivable	3,645	80
Total cash and accounts receivable	9,270	17
Less—Accounts payable as at 31st March, 1917	5,671	87
Balance forward	3,598	30
Total	54,402	45

DISBURSEMENTS ON CAPITAL ACCOUNT.

Granville Street Tide Flats—Development work in connection with reclamation scheme	242,835	86
Discourt on sale of debentures	21,960	00
Balance on capital as at 31st March, 1917—		
Cash in bank	38,636	81
Less—Accounts payable as at 31st March, 1917	3,432	67
Balance forward	35,204	14
Total	300,000	00
	354,402	45

Certified correct,

WILSON & WILSON,
Auditors.

8 GEORGE V, A. 1918

THREE RIVERS HARBOUR COMMISSION.

Hon J. D. HAZEN,
Minister of Marine and Fisheries,
Ottawa, Ont.

SIR,—I have the honour to transmit the statement of operations of the Harbour Commissioners of Three Rivers, for the year terminating the 31st December, 1916.

This statement shows a considerable depression in the commerce of our harbour, as also a great deficit in its business.

There was unloaded on our wharves but one-third of the coal and china clay which was brought there the previous year, and the cast-iron which was used in our workshops did not come through our harbour.

The money which the commissioners had in the bank, and which yielded nearly \$700 per annum, was expended in repairing our wharves which had already deteriorated.

All this explains the deficit in the year just ended.

However, if our harbour has not been frequented as usual it was not for lack of business and commerce, for never have the classes of our city been busier.

The Wayagamak Pulp and Paper Company, the Grès Fall Company, and the Canada Iron Corporation have been obliged to considerably increase their workshops.

The foundation of a steel plant has just been laid and the equipment of a boot factory is being completed; also a shell factory, which will be in operation in a few weeks.

At Grand Mère, the dam of the St. Maurice has been completed and its level can be raised to 20 feet, which will allow of enormous new electrical power, and facilitate navigation up to La Tuque.

During the present year, the population of the town of La Tuque increased by 2,000 souls, and several new industries are in full operation there.

Such elements of progress which are now in action cannot but have some effect on our harbour.

That is why the commissioners, hoping that the war is drawing to a close, that the freedom of the seas will be established, and that the boats employed for transportation of munitions of war will be returned to commerce, look towards the future with confidence and believe that the harbour of Three Rivers will rapidly develop.

I have the honour to be, your obedient servant,

ALFRED DESILETS,
Secretary.

SESSIONAL PAPER No. 21

STATEMENT of number and tonnage of steamers and other vessels reported inward and outward of the port of Three Rivers, for the year 1916.

OCEAN TRAFFIC—RETURN OF VESSELS INWARD.			OCEAN TRAFFIC—RETURN OF VESSELS OUTWARD.		
Nationality.	No.	Tons.	Cleared for	No.	Tons.
British..	32	64,748	Inland ports.....	14	25,722
Danish..	2	4,434	Great Britain.....	20	43,460
	34	69,182		34	69,182
UNITED STATES TRAFFIC.			INLAND TRAFFIC.		
Canal boats.....	223	22,706	Schooners and barges.....	191	25,251
Sail barges.....	14	1,793	Tugs and steamboats.....	618	854,565
	237	24,499		809	879,816

RECAPITULATION.

Ocean traffic.....	34	69,182
United States traffic.....	237	24,499
Inland traffic.....	809	879,816
Grand total.....	1,080	973,497

MERCHANDISE.

Inward.	Outward.
Soft coal..... 36,550 tons	Lumber.....46,066,000 feet
Hard coal..... 9,257 tons	Pulpwood..... 10,048 cords
China clay... 1,120 tons	Sand..... 18,000 tons
Sulphur..... 6,442 tons	Cement..... 900 tons
Sand..... 1,069 tons	Coal..... 154 tons
Bricks..... 1,716,000	Stone..... 50 tons
Cordwood..... 699 cords	Laths..... 2,011,000 feet
Sleepers, R. R... 4,200 pieces	
Apples..... 3,245 bushels	
Shingles..... 550,000 feet	
Hay..... 100 tons	

8 GEORGE V, A. 1918

RECEIPTS AND DISBURSEMENTS FOR THE YEAR 1917.

RECEIPTS.		DISBURSEMENTS.	
	\$ cts.		\$ cts.
Tonnage dues	2,355 09	Current expenses	266 69
Harbour dues Inward	3,851 75	Salaries and commission	4,080 80
Harbour dues Outward.....	2,310 84	Printing and stationery	69 80
Rent of whaves and moorage.....	2,265 36	Repairs and general harbour expenses..	1,154 96
		Interest on debentures	9,525 00
Total receipts.....	10,783 04		
Balance on the 31st December, 1915 ..	4,894 71	Total expenses on revenue.....	15,097 25
		Deposits in bank, and cash on hand,	
		31st December, 1916	580 50
			15,677 75
Grand total.....	15,677 75		
Three Rivers, January 17, 1917.			

ALFRED DESILETS,
Secretary-Treasurer.

REPORT OF BELLEVILLE HARBOUR COMMISSIONERS,

BELLEVILLE, ONT., March 22, 1917.

HARBOUR MASTER'S REPORT.

Imports—			
17,658 tons of coal..	\$	1,765 80	
552 tons of merchandise..		55 20	
			\$ 1,821 00
Exports—			
956 tons of merchandise..	\$	95 60	
1,021 tons of cheese..		102 10	
			197 70
			\$ 2,018 70

GEO. DULMAGE,
Harbour Master.

1915.			
December 31—To balance in bank, as per book..	\$	198 25	
1916.			
June 13—To harbour dues..		156 20	
July 20— " " " " " " " "		472 90	
August 25— " " " " " " " "		489 80	
September 25— " " " " " " " "		200 35	
October 20— " " " " " " " "		162 40	
November 20— " " " " " " " "		298 00	
December 20— " " " " " " " "		221 80	
			\$ 2,199 70
February 3—By Auditors fees..	\$	5 02	
" 17—By Commissioners expenses to Ottawa		25 00	
May 31—By interest on draft..		0 50	
September 30—By interest on debentures..		600 00	
December 31—By Harbour Master's salary..		600 00	
By sinking fund..		645 19	
By balance in bank, as per book..		323 99	
			\$ 2,199 70
			\$ 2,199 70

STATEMENT of Sinking Fund to December 31, 1917.

To credit of sinking fund as per statement rendered December		
31, 1915..	\$	6,385 25
To deposit..		645 19
To interest to date..		193 10
		\$ 7,223 54

The above is a correct statement of the sinking fund to December 31, 1916.

B. L. HYMAN,
Chairman.

SESSIONAL PAPER No. 21

PICTOU HARBOR COMMISSIONERS' REPORT.

STATEMENT of Harbour Dues for the year ending 31st December, 1916.

Balance in bank, December 31, 1915..	\$ 100 00
Collections for year 1916..	556 21
	<hr/>
	\$ 656 21

DISBURSEMENTS for 1916.

Paid Harbour Master..	\$ 200 00
Paid Harbour Commissioners..	356 21
Balance on hand..	100 00
	<hr/>
	\$ 656 21

E. & O. E.

R. P. FRASER,
Collector of Customs.

Pictou Harbour Commissioners' Account for year ending December 31, 1916.

		Balance..		\$ 1,197 41
1915.				
December	30,	By balance..	\$ 2,341 11	
May	19,	By cash from Customs, harbour dues, 1916..	356 21	
"	26,	To paid Wm. McLean, bushing channel.. . .		12 00
"	27,	" ss. <i>Hiawatha</i> putting out buoys.. . .		30 00
June	16,	" E. C. McDonald, bushing E. River..		25 00
September	8,	" Phil. Hall, painting buoys.. . .		7 50
"	9,	" Wm. McLean, bushing river.. . .		6 00
"	9,	" Wm. Munro, labour at wharf.. . .		13 75
"	16,	" Donald Leslie, labour at wharf.. . .		28 75
"	16,	" Henry Talbot, labour at wharf.. . .		35 00
"	23,	" Wm. Munro, labour at wharf.. . .		15 00
"	26,	" Wm. Munro, labour at wharf.. . .		15 00
"	30,	" Henry Talbot, labour at wharf.. . .		10 00
October	16,	" Wm. Munro, labour at wharf.. . .		11 25
"	16,	" Donald Leslie, labour at wharf.. . .		41 00
"	16,	" W. S. Talbot, labour at wharf.. . .		118 50
"	16,	" A. G. Talbot, driving piles.. . .		140 00
"	16,	" Alex. McMillan, blacksmith.. . .		53 73
"	16,	" Wm. Talbot, lumber.. . .		77 77
"	16,	" Donald Grant, lumber.. . .		285 61
1916.		" E. C. McDonald.. . .		4 50
December	30,	" ss. <i>Hiawatha</i> taking in buoys.. . .		30 00
"	30,	" Solicitor for year.. . .		50 00
"	30,	" Hugh Murray, New Glasgow wharf		
"	30,	per vouchers.. . .		389 55
		" H. B. Ross, Secretary.. . .		100 00
			<hr/>	
			\$ 2,697 32	\$ 2,697 32
		By balance..	\$ 1,197 41	

Pictou, N.S., December 31, 1916.

APPENDIX No. 14.

PORT WARDENS REPORTS FOR THE YEAR ENDING DECEMBER 31, 1916.

Returns of fees collected were received from fifteen port wardens during the year, eight from Nova Scotia, one from New Brunswick, two from Quebec, and four from British Columbia.

The total amount of fees collected from port wardens for surveys of hulls, hatches, and cargoes, and for granting certificates of seaworthiness was \$31,299.90.

The fees range from \$8 to \$20, according to the time and assistants employed in the survey.

The return of the port warden of Vancouver, B.C., is for the fiscal year 1916-17, ending on March 31, 1917, that of the port warden of Halifax is an approximate return, the records of the office having been destroyed by a fire which occurred on December 2, 1916.

LIST of Port Wardens who made returns and amounts of fees collected.

Port.	Port Warden.	Fees collected.
Chatham, N.B..	M. A. Coggin.. . . .	\$ 90 00
Halifax, N.S..	Neil Hall.. . . .	1,326 50
Louisburg, N.S..	D. J. Matheson.. . . .	776 00
Montreal, P.Q..	Archibald Reid.. . . .	21,122 40
Nanaimo and Departure Bay, B.C.. . . .	J. S. Knarston.. . . .	165 00
Porter, N.S..	James Reid.. . . .	74 00
Port Hawkesbury, N.S..	Nicholas Martin.. . . .	105 00
Prince Rupert, B.C..	Capt. E. McCoskrie.. . . .	49 00
Quebec, P.Q..	Alexander Russell.. . . .	1,692 00
Sydney, N.S..	Angus McQuarrie.. . . .	768 00
North Sydney, N.S..	W. H. Kelly.. . . .	168 00
Vancouver, B.C..	S. Cullington.. . . .	4,321 00
Victoria and Esquimalt, B.C..	Charles E. Clarke.. . . .	558 50
Westport, N.S..	W. B. Welch.. . . .	Nil.
Yarmouth, N.S..	R. M. Ferguson.. . . .	84 50
		<hr/>
		\$ 31,299 90

REPORT OF THE PORT WARDEN OF MONTREAL.

MONTREAL, January 8, 1917.

Deputy Minister of Marine,
Ottawa.

SIR,—I have the honour by direction of the council of this Board, and in compliance with section 31 of the Act governing the port warden office, 45 Vic., chap. 45, to transmit herewith documents as follows:—

- 1. Port Warden annual report for the year 1916.
- 2. Audited statement of receipts and expenditures of the port warden office for the year ending December 31, 1916.
- 3. Statement of investments of port warden surplus funds.

GEO. HADRILL,
Secretary.

SESSIONAL PAPER No. 21

Enc.

OFFICE OF THE PORT WARDEN.

MONTREAL, December 30, 1916.

To the President and Council
of the Montreal Board of Trade.

GENTLEMEN,—I have the honour to submit the annual report of the business of the port warden's office with the statement of the exports, receipts and expenditure for the year 1916.

April 19, 1916: The business of the port for the season of navigation 1916, opened with the loading of the schooners *Hon. H. Langevin*, *Grace Darling*, and *N. W. White*; these vessels had wintered in the harbour.

April 20, 1916: Ice still holding at Sorel, the steamers *Lady Grey* and *Montcalm* still working below that place.

April 21, 1916: The Marine and Fisheries Department commenced to lay the spar buoys.

April 24, 1916: River clear of ice, ss. *Gaspesian* arrived from Quebec.

The icebreaking steamers claim to have kept the river open and clear of ice as high as Three Rivers the past winter.

May 1, 1916: The first ocean steamer to arrive was the Italian ss. *Bayern* from Genoa.

June 9, 1916: The ss. *Portreath* reported passing through the straits of Belle Isle. (This is unusually early.) She arrived here on the 13th June.

Since that time, owing to the war conditions, reports of vessels have not been made with any regularity.

It is reported the Australian Government now own and employ a fleet of thirty-five cargo steamers, some of which have visited this port this season.

The building of steel vessels at this port has been inaugurated this year, and in order to facilitate the construction and classification of these vessels, an exclusive surveyor for Lloyds Register of shipping has been appointed for this district.

I have to record the following disasters this season in the gulf and river St. Lawrence:—

June 19, 1916: The ss. *Arachne*, Sargent, master, went ashore in fog on Little Miquelon island; was floated, returned to Quebec, repaired, and proceeded on her voyage.

July 9, 1916: The Italian ss. *Moltke* ran ashore below Father point, was floated and proceeded.

July 24, 1916: The ss. *English Monarch*, Potter, master, struck Bird rocks, continued to Sydney, C.B., leaking, and returned to Montreal for repairs.

July 27, 1916: The ss. *Middleham Castle*, Kelly, master, struck near Matane on westbound voyage; damage slight, repaired here.

July 31, 1916: The ss. *Fremona*, Melling, master, ran ashore off south point of Anticosti in dense fog; was floated, returned to Quebec for repairs, reloaded and proceeded on her voyage.

August 11, 1916: The ss. *Baytigern*, Wilson, master, grounded in the river near buoy 188M.; floated, returned to the wharf, surveyed, and proceeded.

August 29, 1916: The ss. *White Sea*, Stephens, master, stranded at St. Mary bay, N.F.; total wreck.

September 25, 1916: The ss. *Kalibia*, J. Stewart, master, grounded off Fame point on westbound voyage; temporary repairs made here, sent to New York for permanent repairs.

November 21, 1916: The ss. *Jason*, W. Duncan, master, grounded off Vickers' dock; lightered, floated, returned to wharf, was surveyed, reloaded and proceeded.

8 GEORGE V, A. 1918

There has been a general scarcity of tonnage in the St. Lawrence this season, overseas and coastwise service have alike suffered; the ocean tonnage has been materially increased by H.M. transports, of which there were 160 sailings, and the Hudson's Bay Company's foreign service, of which there were 63 sailings.

A number of lake vessels have been transferred to the ocean trade this season.

The last regular steamship to sail hence was the ss. *Manchester Shipper*, which sailed at 6.40 a.m. on the 1st December, followed by the Norwegian steamship *Begna* with full cargo of wheat for the Belgian Relief, on the 3rd December.

The water in the ship channel averaged better this year than last, the lowest water this year was 29' 7" as against 28' 9" last year.

December 8, 1916: The Department of Marine and Fisheries completed lifting the buoys.

This has been a fine fall, there being very little ice in the harbour on the 12th December.

A total of 558 foreign-going steamships reported at this office this season, with a tonnage of 1,926,929 tons, against 489 vessels of 1,662,686 tons last season, an increase of 69 vessels and 264,243 tons.

The business to the lower ports this season consisted of: Entered 131 vessels of all classes with a tonnage of 175,994 tons, against 321 vessels of all classes with a tonnage of 591,529 tons, a decrease of 190 vessels and 415,535 tons this season.

Clearances of vessels loaded for the lower ports this season were 72 vessels of all classes with a tonnage of 37,074 tons, against 67 vessels of all classes with a tonnage of 49,055 tons, an increase of 5 vessels and a decrease of 11,981 tons this season.

By notice from the Customs Department, manifests of transport vessels loading at this port were not lodged at this office till the expiry of thirty days after the departure of the vessel.

The shipments of various kinds for the past season, manifested and filled at this office up to the 15th December, as per attached statements, leaving thirteen outstanding manifests.

ARCHIBALD REID,

Port Warden.

SESSIONAL PAPER No. 21

COMPARATIVE STATEMENT of Shipments 1915 and 1916 as per manifests reported at the Port Warden's Office to 15th December.

Description.		1916.	1915.	1916.	
				Increase.	Decrease.
Wheat...	Bush.	34,602,345	34,025,099	577,246	
Peas	"	34,469	29,199	5,270	
Barley	"	4,137,186	1,377,441	2,759,745	
Oats	"	24,252,649	7,637,209	16,615,440	
Corn...	"	4,878,849	166,374	4,712,475	
Flaxseed	"	1,950	1,926	24	
Rye	"	603,055		603,055	
		68,510,503	43,237,248	25,273,255	
		43,237,248			
Total increase for 1916		25,273,255			
Flour and meal.....	Bbls.	2,575,783	976,752	1,599,031	
Ashes	"	254	418		164
Apples	"	68,166	94,328		26,162
Cheese	Boxes	2,153,162	1,853,006	300,156	
Butter.....	"	180,166	54,663	125,503	
Eggs	"	375,520	285,483	90,037	
Boxmeats	"	702,147	999,696		297,549
Lard	"	323,622	413,609		89,987
Dressed meats.....	Qtrrs.	124,940	87,639	37,301	
Pulp.....	Tons	15,608	6,548	9,060	
Paper	"	23,100	17,042	6,058	
Sundries	"	554,203	325,170	229,033	
Hay.....	"	81,646	107,766		26,120
Oilcake	"	10,430	9,907	523	
Minerals	"	26,485	16,964	9,521	
Dried grains.....	"	48	48		
Lumber	Ft. Bbl. Meas.	95,978,013	98,121,264		2,143,251
Cattle	Head		12,386		12,386
Horses and mules.....	"	33,032	68,777		35,745

Statement of Oversea or Foreign-going vessels.

Description.	1916.		1915.	
	No.	Tons.	No.	Tons.
Steamers	558	1,926,929	489	1,662,686

Increase of 69 vessels and 264,243 tons.

Statement of Lower Port Arrivals.

Description.	1916.		1915.	
	No.	Tons.	No.	Tons.
Steamers.....	103	173,247	305	590,094
Sailing vessels	28	2,747	16	1,435
	131	175,994	321	591,529

Decrease of 190 vessels and 415,535 tons.

8 GEORGE V, A. 1918

Clearances for Lower Ports.

Description.	1916.		1915.	
	No.	Tons.	No.	Tons.
Steamers	51	34,965	58	48,229
Sailing vessels	21	2,109	9	826
	72	37,074	67	49,055

Increase of 5 vessels and decrease of 11,981 tons.

Revenue, 1916.....	\$ 21,122 40
Revenue, 1915.....	15,523 63
Increase	\$ 5,598 77

SESSIONAL PAPER No. 21

STATEMENT of Receipts and Expenditure for the year ending 31st December, 1916.

DR.		CR.	
1915.		1916.	
Dec 31 To balance cash in hand.....	\$ 216 38	Dec. 30 By paid salaries, etc.—	
" balance cash in bank.....	11,928 28	Port Wardens and Staff.	\$12,459 48
1916.		Board of Trade, Secretarial expenses..	1,000 00
Dec.30 " Revenue derived from 30 days outstanding	\$12,144 66	Rent, fuel and taxes.....	511 42
manifests, 1915.		Telephones light, cleaning office, etc,	292 00
1,035,012 bushels oats,		Lloyds' register and shipping papers..	48 59
6,651 tons hay,		Books, printing and stationery.....	57 95
= 56,000 bbl. flour and meal.		Cab and carfares.....	22 00
20,484 tons sundries.		Miscellaneous expenses..	46 29
" Revenue derived as under 1916—	409 68	Alf. W. Hadrill, auditor.....	100 00
34,602,345 bushels wheat,		Office furniture and repairs.....	156 08
34,469 bushels peas,			
4,137,186 bushels barley,		Treasurer, Board of Trade Invest-	\$14,693 81
23,217,637 bushels oats,		ment Canadian War Loan, \$6,000.	5,850 00
4,878,849 bushels corn,		Outstanding accounts, 1916.....	308 07
1,950 bushels flaxseed,		Balance cash in hand.....	30 94
603,055 bushels rye,		Balance cash in bank.....	20,529 75
10,430 tons oilcake,			
26,485 tons minerals,			
74,995 tons hay,			
48 tons dried grains,			
33,032 head horses and mules,			
254 bbl. ashes,			
= 2,519,783 bbl. flour and meal,			
68,166 bbl. apples.....	170 45		
821,711 tons sundries.....	16,434 22		
18,375 tons lumber.....	367 50		
95,978,013 feet sawn lumber..	479 80		
Port Warden's fees (inwards).....	142 00		
Port Warden's fees (outwards).....	2,911 00		
Special surveys.....	157 00		
Damaged cargo certificates.....	50 75		
	\$ 20,712 72		
Treasurer, Board of Trade Dominion Govern-			
ment refunded (stock).....	2,300 00		
Interest bank account.	236 43		
Treasurer, Board of Trade, interest on invest-			
ments	\$ 5,609 08		
	5,845 51		
	\$ 41,412 57		
1917			
Jan. 2 To balance	\$ 20,560 69		

Audited and found correct,
ALF. W. HADRILL,
Auditor.

E. & O. E.

ARCHIBALD REID,
Port Warden.

Montreal, 8th January, 1917.

Statement of the Investments of the Surplus Funds of the Port Warden Office at Montreal and of Interests Accruing therefrom for the Year ending December 31, 1916.

Dec	1888—Invested \$1,800 in purchase of Dominion Government Stock redeemed March 27, 1916.				
Jan	1888—Invested 1,000 in purchase of City of Montreal Bonds, Nos. 1720-1721-1722-1723 and 1724 for \$1,000 each.				
Mar	1887—Invested 10,000 in purchase of City of Montreal Consolidated Fund Stock.				
Apr	1888—Invested 10,000 in purchase of Montreal Harbour Bonds.				
May	1887—Invested 4,000 in purchase of Montreal Harbour Bonds.				
Jun	1887—Invested 7,527.50 in purchase of Dominion Government Bonds.				
Aug	1910—Invested 10,000 in purchase of Debentures of the Sealed Treasuries for the Municipality of the Town of Outremont, Nov. 31 to 40.				
Oct	1905—Invested 9,485.62 in purchase of Town of Toronto Bonds, Nos. 54013 to 54022.				
Nov	1916—Invested 5,867.50 in purchase of Canadian War Loan Bonds to Montreal Board of Trade Building Fund.				
	Total investments	\$132,000		Total interest	\$5,621.70

PHILIP D. GORDON,
Treasurer Montreal Board of Trade,
and
GEO. HADRIEL,
Secretary Montreal Board of Trade.

SESSIONAL PAPER No. 21

APPENDIX No. 15.

REPORTS OF SUBSIDIZED WRECKING COMPANIES.

SALVAGE SERVICES RENDERED BY THE QUEBEC SALVAGE AND WRECKING COMPANY FROM THE 31st MARCH, 1916, TO 31st MARCH, 1917.

June 15.—British steamer *Haulwen*; this steamer struck the bottom on the way from Montreal to Quebec. Our diver examined the entire bottom, stern frame, rudder and propeller while this steamer was lying afloat at pier 27, Quebec, after which seaworthy certificate was granted by port warden and Lloyds.

July 10.—Our diver cleared the suction pipes for the Lévis water works.

July 20.—British steamer *Hochelaga*; stopped leak and made temporary repairs in starboard bilge No. 1 hold. Damage sustained by striking bottom in order to avoid serious collision with the ss. *Etoile*.

July 24 to September 5.—British transport steamer *Matatua*; went to assistance of this steamer which was stranded in St. Mary bay, Newfoundland, loaded with 5,100,000 feet of lumber, placed pumps on board, discharged about 3,000,000 feet of lumber, pumped her out and towed her off the beach and proceeded under tow with her to St. Mary harbour, where our diver stopped most of the leaks through her bottom, after which this steamer proceeded under her own steam, accompanied by the ss. *Lord Strathcona* to Halifax.

August 1 to September 15.—British transport steamer *Fremona*; went to the assistance of this steamer which was stranded about two miles west of South point, Anticosti. Found all compartments full of water; made temporary repairs, pumped her out, refloated her and brought her to Quebec and attended her while discharging and up to the time she was placed in the dry dock at Lévis.

September 8.—Belgium transport steamer *Indutiomare*; this steamer stranded on White Horse rock off Magdalen islands with full cargo of lumber; all compartments full of water. A heavy gale swept her off the rock, but steamer floated on her cargo with her after deck six inches submerged; in this condition we towed her from off Magdalen islands to Port Hawkesbury, strait of Canso, where we beached her in shallow water.

September 25 to 30.—British transport steamer *Kalibia*; went to the assistance of this steamer which was stranded off Fox River, about 12 miles southeast of Fame point. By discharging her bunker coal and application of compressed air to her tanks and assistance of the ss. *Lord Strathcona* for towing, the steamer was refloated and brought to Montreal under compressed air.

October 16.—Our diver cleared the suction pipes for the Lévis water works.

November 9 to 13.—Canadian steamer *Queen*; went to the assistance of this steamer which was stranded and rested on her side on the beach off the wharf at St. Catherines bay; made necessary arrangement, pumped her out, towed her off, and brought her to Quebec.

November 19 and 20.—British transport steamer *Saint Winifred*; went to the assistance of this steamer which grounded off Champlain, below Three Rivers; towed her off and accompanied her to Quebec, where our diver examined the entire bottom, stern frame, rudder and propeller, but found no damage.

8 GEORGE V, A. 1918

December 6 to 24.—Italian transport steamer *Algier*; went to the assistance of this steamer which was lying at anchor at Gaspé with damaged machinery, and towed her to Halifax.

The ss. *Lord Strathcona*, schooner *G.T.D.* properly manned and all other salvage gear has been kept in commission during the season of navigation to proceed to any accidents or mishaps to ships at very short notice.

HAROLD KIERLAND,

Superintendent.

LEWIS, May 12, 1917.

REPORT OF SALVAGE OPERATIONS OF THE BRITISH COLUMBIA
SALVAGE COMPANY, LIMITED, FOR THE YEAR ENDING MARCH
31, 1917.

June 25 to October 23, 1916.—To salving ss. *Bear*, ashore at cape Mendicino, California.

September 9 to September 10, 1917.—To salving ss. *Queen City*, on fire, Victoria harbour.

September 15 to September 30, 1915.—To salving ss. *Congress*, on fire, Coos bay, Oregon.

January 12 to January 13, 1917.—To salving ss. *Stanley Dollar*, stranded on Heron rock, Active pass.

January 26 to February 5, 1917.—To salving ss. *Prince John*, ashore Wrangwell narrows, Alaska.

February 7 to February 9, 1917.—To salving ss. *Princess Patricia*, stranded on Siwash rock, Vancouver, B.C.

March 23 to March 31, 1917.—To salving ss. *Prince Rupert*, ashore on Genn island, near Prince Rupert.

APPENDIX No. 16.

LIVE-STOCK SHIPMENTS.

List of live stock shipped from May, 1916, to November, 1916, to ports in Great Britain and France.

MONTREAL.

Months.	Sheep.	Horses.	Cattle.	Mules.
1916.				
May.....		29		1,585
June.....		1,220		719
July. . .		2,193		219
August		2,921		20
September		2,862		1,047
October .		1,633		34
*November		1,440		271
		12,298		3,895

COMPARATIVE STATEMENT of Live Stock shipped from Canada to British ports from the years 1904-5 to 1916-17. Shipments to France as well in 1914-15, 1915-16, and 1916-17.

	Sheep.			Cattle.			Horses.			Totals.		
	Mont-real.	St. John.	Hali-fax.	Mont-real.	St. John.	Hali-fax.	Mont-real.	St. John.	Hali-fax.	Sheep.	Cattle.	Horses.
1916-17.....	Nil.	Nil.	Nil.	Nil.	Nil.	Nil.	12,298	Nil.	Nil.	Nil.	Nil.	12,298
1915-16.....	"	"	"	12,426	"	"	12,803	"	"	"	12,426	12,803
1914-15.....	145	"	"	25	"	"	1,328	"	"	145	25	1,328
1913-14.....	296	"	"	512	"	"	134	"	"	296	512	132
1912-13.....	178	"	"	6,469	"	"	175	"	"	178	6,469	175
1911-12.....	3,725	1,798	"	45,866	2,001	"	138	14	"	5,523	47,967	154
1910-11.....	248	2,508	"	72,555	3,301	"	497	19	"	2,756	75,856	516
1909-10.....	1,616	Nil.	"	94,314	4,632	"	286	Nil.	"	1,616	98,946	286
1908-09.....	10,111	151	"	99,830	22,923	3,097	116	65	"	10,262	125,850	181
1907-8.....	11,585	4,169	"	96,977	20,210	Nil.	174	51	"	15,753	127,187	225
1906-7.....	10,791	1,371	"	128,160	38,148	"	661	57	"	12,162	159,308	718
1905-6.....	19,077	3,971	"	126,871	33,548	1,042	568	79	"	23,048	161,456	647
1904-5.....	49,422	17,283	"	108,533	33,833	745	279	213	"	66,715	143,131	492

*In year 1916-17 3,895 mules shipped from Montreal.

SESSIONAL PAPER No. 21

STATEMENT showing the result of returns of shipping and discharging of seamen received by the Department of Marine and Fisheries, etc.—*Continued.*

NEW BRUNSWICK—*Concluded.*

Name of Port.	Name of County.	Name of Shipping Master.	Seamen Shipped.	Seamen Discharged.	Amount.
					\$ cts.
St. John.....	St. John.....	H. W. Purdy.....	1,135	430	701 50
Shediac.....	Westmoreland.....				
Shippigan.....	Gloucester.....				
St. Stephen.....	Charlotte.....				
St. Martins.....	St. John.....	R. Allan Love.....	40	20	25 00
St. George.....	Charlotte.....	Geo. A. Craig.....	3	2	2 10
			1,219	497	762 60

NOVA SCOTIA.

Advocate Harbour.....	Cumberland.....	E. C. Moore.....	9	7	6 00
Amherst.....	Cumberland.....	B. W. Balser.....		3	0 90
Annapolis.....	Annapolis.....	Thomas M. Buckles..	29	29	23 20
Antigonish.....	Antigonish.....	W. C. Chisholm.....			
Apple River.....	Cumberland.....	H. H. Mosher.....	13	11	9 80
Arichat.....	Richmond.....	C. E. Herbin.....	10	1	5 30
Baddeck.....	Victoria.....				
Barrington.....	Shelburne.....	W. W. Gray.....			
Barton.....	Digby.....	F. W. Hutchison.....	53	40	38 50
Bayfield.....	Antigonish.....	W. H. Strople.....			
Belliveau Cove.....	Digby.....	E. E. Theriault.....	20	17	15 10
Bear Harbour.....	Halifax.....				
Beaver River.....	Digby.....	Fred Schmidt.....	42	24	28 10
Bridgewater.....	Lunenburg.....	A. C. Owen.....	64	30	41 00
Canning.....	Kings.....	J. W. Miller.....	6	2	3 60
Canso.....	Guysborough.....	P. C. Cullen.....	42	31	30 30
***Church Point.....	Digby.....	P. A. Saulnier.....	10	13	17 90
Clark Harbour.....	Annapolis.....	M. S. Nickerson.....	3	2	2 10
Clementsport.....	Annapolis.....	M. C. Jones.....	34	25	24 50
Cheverie.....	Hants.....	Nelson Brady.....	12	3	6 90
Descousse.....	Richmond.....	Felix Landry.....			
Digby.....	Digby.....	A. M. Gidney.....	27	27	21 60
Glace Bay.....	Cape Breton.....				
Guysborough.....	Guysborough.....	H. J. Steeves.....			
Hillsborough.....	Albert.....	H. J. Stevens.....	6	5	4 50
Hawkesbury.....	Inverness.....	W. McLean.....	3	5	2 40
Halifax.....	Halifax.....	Howard Bligh.....	3,949	3,541	3,036 80
Hastings.....	Inverness.....				
Hantsport.....	Hants.....	J. W. Lawrence.....	7	6	5 30
Havre Bouche.....	Annapolis.....				
Isaac Harbour.....	Guysborough.....				
Jordan Bay.....	Shelburne.....	E. Lyle Martin.....			
Lahave.....	Lunenburg.....	William Maschke.....	25	46	41 38
Liscomb.....	Guysborough.....	Wm. Hemlon.....	11	5	7 00
†Liverpool.....	Queens.....	Elizabeth Hemeon....	87	13	47 40
Lockeport.....	Shelburne.....	J. R. Ruggles.....	10	0	5 00
Londonderry.....	Colchester.....	J. A. Blackie.....			
*Lunenburg.....	Lunenburg.....	Wm. Shupe.....	607	502	604 10
Louisburg.....	Cape Breton.....	F. Townsend.....	429	409	337 20
Lepreau.....	Charlotte.....	J. E. Haggerty.....			
**Mahone Bay.....	Lunenburg.....	Jacob Rhuland.....	54	56	58 80
Mainadieu.....	Cape Breton.....	A. McDougall.....			
Maitland.....	Hants.....	Rankon McDougall....	7	3	4 40
Margaretville.....	Annapolis.....	J. L. Cleveland.....			

***Bills of Health, \$9.

*60 fishing crews at \$2.50 each.

†\$15 received from fishermen.

**6 fishing crews pay \$15.

8 GEORGE V, A. 1918

STATEMENT showing the result of returns of shipping and discharging of seamen received by the Department of Marine and Fisheries, etc.—Continued.

NOVA SCOTIA—Concluded.

Name of Port.	Name of County.	Name of Shipping Master.	Seamen Shipped.	Seamen Discharged.	Amount.
					\$ cts.
Margaree	Inverness				
Merigomish	Pictou				
Meteghan	Digby	L. T. Melanson	10	9	7 70
New Gampbellton	Victoria	W. R. McKinnon			
Northeast Harbour	Shelburne	G. B. Swaine			
North Sydney	Cape Breton	M. J. Ross	854	501	577 30
Parrsboro	Cumberland	E. Woodworth	181	128	128 90
Pictou	Pictou	A. D. Patterson	59	50	44 50
Port Greville	Cumberland	G. A. Pettis	56	51	43 30
Port Hawkesbury	Inverness				
Port Hastings	Inverness	Geo. L. McLean	6	3	3 90
Port Hood	Inverness	Ed. D. Tremain			
Port Lorne	Inverness				
Port Mulgrave	Guysborough	M. J. Keating	53	38	37 90
Port Latour	Shelburne	Benj. R. Smith			
Port Medway	Queens	T. Sabeau	8	5	5 50
Port Morien	Cape Breton				
Port Williams	Kings	J. R. Starr		2	0 60
Port Wade	Annapolis				
Pubnico	Yarmouth	J. L. Belliveau	10	0	5 00
Pugwash	Cumberland	R. McLatchy			
River Hebert	Cumberland	J. F. Moffat	7	1	3 80
*Riverport	Lunenburg	Stephen Ritcey	29	35	47 50
St. Anns	Victoria	D. McAuley			
St. Peters	Richmond	W. A. Morrison			
Salmon River	Digby	F. P. Deveau	18	21	15 30
Sheet Harbour	Halifax	O. P. Fraser			
Shelburne	Shelburne	W. W. Atwood	61	13	34 40
Sherbrooke	Guysborough				
Spencer Island	Cumberland	Geo. D. Spicer	9	11	7 80
Sydney	Sydney	Mal. McKinnon	644	523	478 90
Thorne Cove	Annapolis				
Truro	Colchester				
Tatamagouche	Colchester	James Ramsay			
Wallace	Cumberland				
Walton	Hants				
West Arichat	Richmond				
Weymouth	Digby	A. H. Brooks	37	20	24 50
West Haven	Guysborough				
Windsor	Hants	A. H. Spence	56	64	45 20
Wolfville	Kings	C. R. Bill			
Yarmouth	Yarmouth	S. E. Messenger	853	651	621 80
			8,520	6,982	6,562 88

*Nine fishing crews paid \$22.50.

PRINCE EDWARD ISLAND.

Alberton	Prince	J. F. White			
Charlottetown	Queens	F. Beers	100	51	65 30
Crapaud	Queens	Neil Waddell	7	1	2 30
Georgetown	Kings				
Malpeque	Prince	R. J. Crafer			
Murray Harbour	Queens	H. A. Bell			
Montague	Kings	E. Parkman	21	0	10 50
Pinette	Queens				
Port Hill	Prince				
St. Peters	Kings				
Souris	Kings	Arch. Currie	4	4	3 20
Summerside	Prince	Jos. Reid	6	2	3 60
Tignish	Prince				
			138	58	84 90

SESSIONAL PAPER No. 21

STATEMENT showing the result of returns of shipping and discharging of seamen received by the Department of Marine and Fisheries, etc.—*Concluded.*

BRITISH COLUMBIA.

Name of Port.	Name of County.	Name of Shipping Master.	Seamen Shipped.	Seamen Discharged.	Amount.
					\$. cts.
Aboucet.....	Vancouver.....				
Clayoquot.....	Comox-Atlin.....				
Hesquait.....	Comox-Atlin.....	Chas. Moser.....			
Kyuquot.....	Comox-Atlin.....	Amos Ellis.....	8	10	6 40
Masset.....	Comox-Atlin.....	C. Harrison.....			
Prince Rupert.....	Prince Rupert.....	E. McCoskrie.....	368	426	311 80
New Westminster.....	New Westminster.....	M. M. Matheson.....			
Victoria.....	Victoria.....	Geo. Kirkendale.....	1,703	1,580	1,327 50
Vancouver.....	New Westminster.....	J. B. Campbell.....	2,810	2,578	2,135 90
			4,889	4,594	3,781 60

RECAPITULATION.

	Seamen Shipped.	Seamen Discharged.	Amount.
			\$. cts.
Quebec.....	6,136	4,558	4,337 40
New Brunswick.....	1,219	497	762 60
Nova Scotia.....	8,520	6,982	6,562 88
Prince Edward Island.....	138	58	84 90
British Columbia.....	4,889	4,594	3,781 60
Total.....	20,902	16,689	15,529 38

